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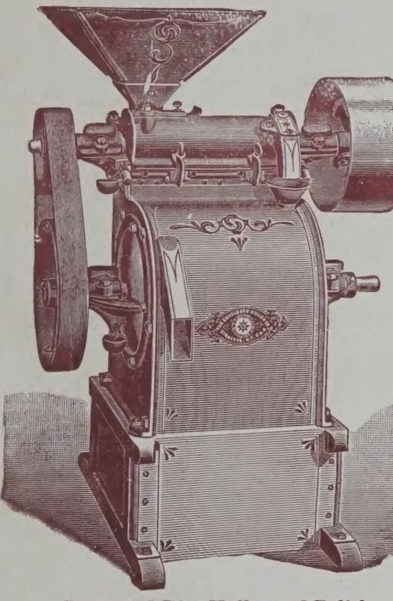
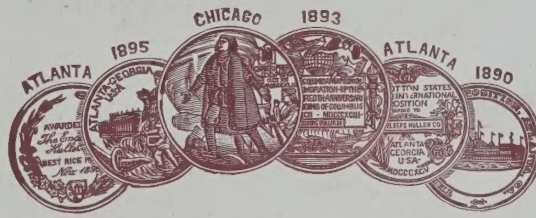
The American Exporter

WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LV. NEW YORK, DECEMBER, 1904. No. 1.

Rice and Coffee Hulling Machinery


Improved Rice Huller and Polisher.

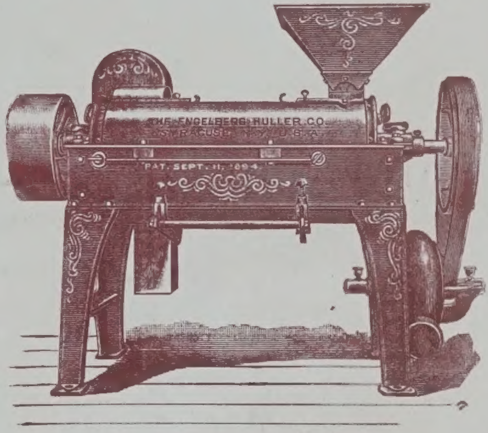


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



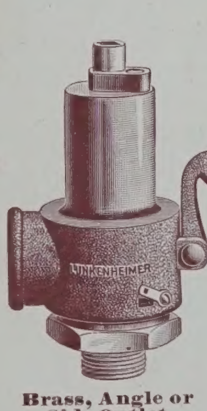
Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

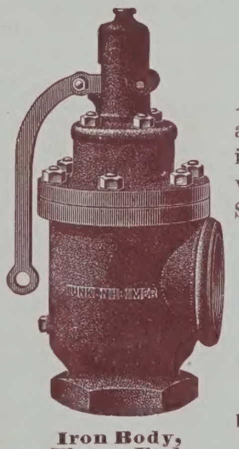
THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.

Lunkenheimer Pop Safety Valves

Brass, Top Outlet.



Brass, Angle or Side Outlet.



Iron Body, Flange End.

FOR

STATIONARY, PORTABLE AND MARINE STEAM BOILERS

Are made of the best materials, provided with large springs, have full relieving capacity and always prompt and reliable in operation. In brass top or angle outlet, ⅜ inch to 3 inches; in iron, brass mounted, screw or flange ends, 2 inches to 6 inches. Also furnished with nickel seats, if desired. All valves rigidly tested and inspected before shipment. Specify LUNKENHEIMER make and order from any leading export house.

Write for Catalog of Brass and Iron Steam Specialties and Engineering Appliances of superior quality.

THE LUNKENHEIMER CO.,

BRANCHES:
New York, 26 Cortlandt Street.
Philadelphia, 1428-32 Callowhill St.
New Orleans, Tulane-Newcomb Bldg.
London, 35 Great Dover Street, S. E.
Paris, 24 Boulevard Voltaire.

SOLE MAKERS,
Cincinnati, O., U. S. A.

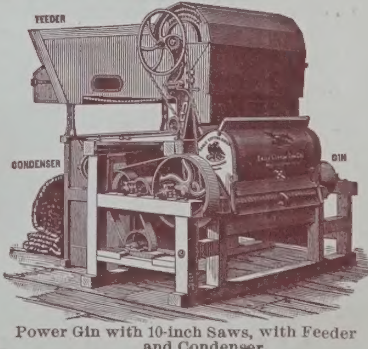
EAGLE COTTON GINS.

Hand Gin.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.

Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO.,
BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

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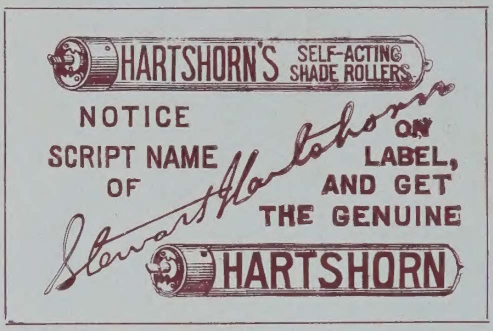

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Office and Factory:

EAST NEWARK, NEW JERSEY, U. S. A.

Stockroom: No. 7 Lafayette Place, New York.

DIETZ LITTLE STAR
TUBULAR LANTERN.

There has been a demand for a small size Tin Tubular Lantern at a low price. We offer the Little Star to fill this demand. It is similar to our Victor Lantern in appearance and possesses the same sterling qualities of the lantern that has made our name so well known throughout the earth.

This Lantern has our new round-top oil pot, and is a very handsome little Lantern. It is 11 inches high (the Victor is 13 inches) and weighs 22 oz. (the Victor 30½ oz.). It burns well and has a No. 1 burner, ⅝-in. wick, takes a U. S. globe and is made in Tin and Brass.

It has the same convenient side lift as our Victor and Monarch Lanterns. It can be filled, lighted, regulated and extinguished without removing the globe.

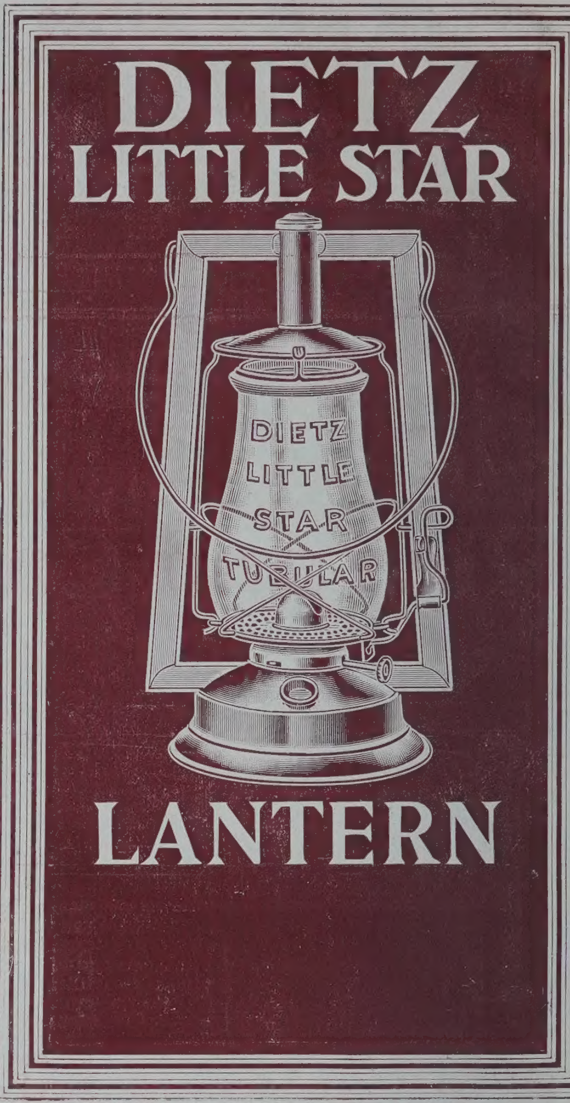
The oil pot holds 9 oz. of oil and will burn 13 hours with one filling.

They are packed in cases containing one doz., weighing 27 pounds (gross).

We are the largest and oldest manufacturers of outdoor Lamps and Lanterns for every conceivable purpose. We will be pleased to send you proforma invoice, showing cost of one gross or more of the Little Star Lantern laid down in your port or any other Lantern you may select in our catalogue (Spanish or English), which we will be pleased to mail you unon request.

Tin, - $8.50 per doz.
Brass, satin finish, $12 "

Discount for Export, 50 and 10 per cent.



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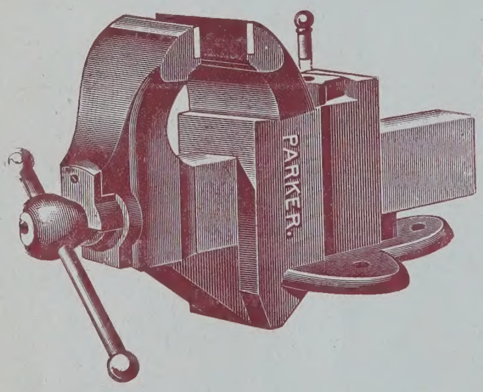
Established 1840.



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Parker Vise

Unequaled for Strength, Durability and Finish.

Has stood the test of over **50 YEARS.**

EVERY VISE MADE FOR SERVICE.

The Parker Coffee Mills.

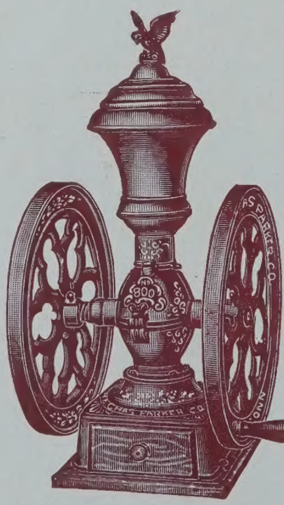
ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over **60 YEARS** and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.


CHAS. PARKER CO.

THE

CHAS. PARKER CO.,

MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET

Arcade Manufacturing Co.

(INCORPORATED 1885).

Manufacturers of

"HANDY" CORK PULLER,
"CHAMPION" CORK PULLER,

Phoenix Cork Puller, Perfect Lemon Squeezers and "Crystal," "Imperial," "Jewel," "X-Ray," "Royal Pound," "New Home" and "Favorite"

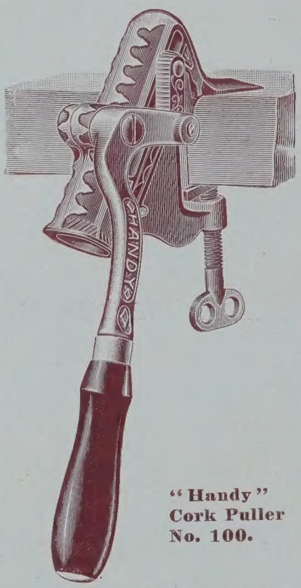
COFFEE MILLS,

AND

"PERFECT" LEMON SQUEEZERS

NOTE.—The prices here quoted include boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 100. Handy Cork Puller is "A Little Beauty." Is simple, compact and reliable. Can be fastened to a bar or table in the regular way; packed one in a box, twelve in a case. Price per dozen, cased ready for transportation, **$12.50.** Size of case, 13x17½x28 inches. Weight: Gross, 80 pounds; Net, 66 pounds.



"Handy" Cork Puller No. 100.

No. 1. Champion Cork Puller. The Champion "is abreast of the times," and 'way ahead of all competitors; will quickly and safely draw the cork from any bottle, and as readily recorks the bottle after part of contents has been used—a feature highly appreciated by all users. Made of the best grades of oil-tempered steel. A quick and sure puller and effective recorker. Especially adapted for use in hotels, cafés, clubs, restaurants or wherever a stationary puller can be used. Packed in individual boxes. Each case contains six (6) Champion Cork Pullers. Price per dozen, **$24.00.** Size of two cases, each containing six Champion Cork Pullers, 15½x24½x26 inches. Weight: Gross, 128 pounds; Net, 90 pounds.

"Champion" Cork Puller No. 1.

Orders received direct or through export commission houses. Please mail us duplicate of order. NOTE.—Our Catalogue, illustrating and describing the various styles of Hardware Specialties Manufactured by us, mailed postpaid.

ARCADE MANUFACTURING CO., - Freeport, Ill., U. S. A.

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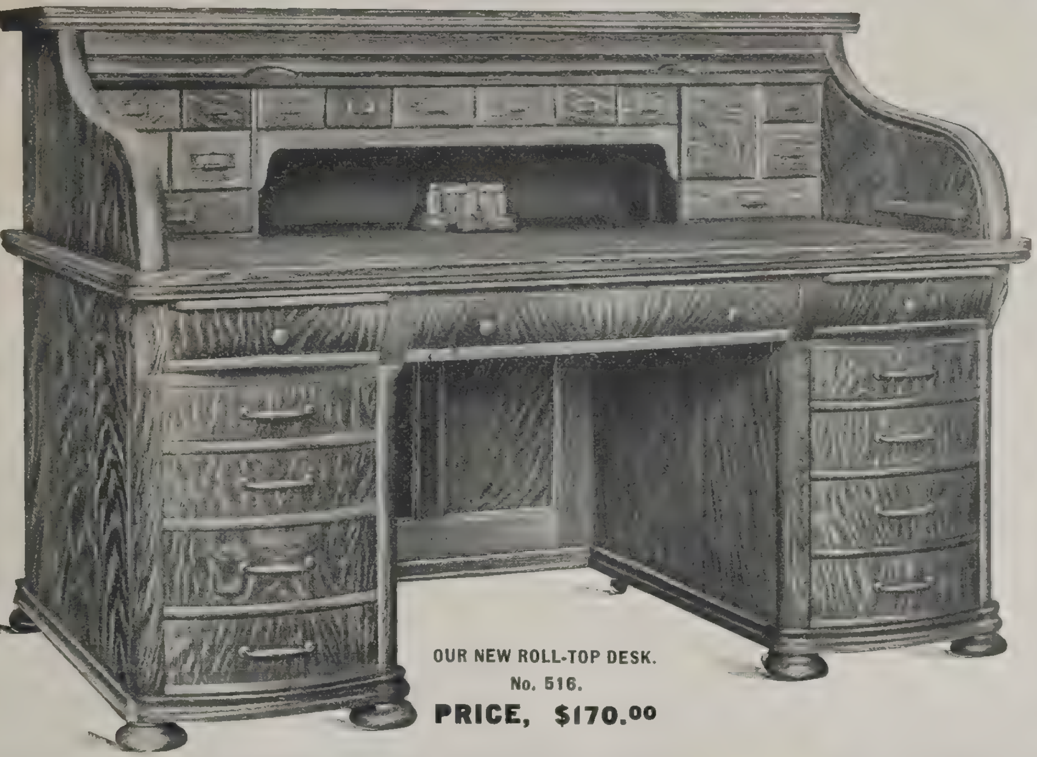
GRAND RAPIDS DESK COMPANY,

Manufacturers of **HIGH-GRADE DESKS** **OFFICE HOME** **FOR EXPORT.**

ESTABLISHED 1880.

☞ Send for **Net Export Prices,** which include boxing and delivery F. O. B. New York.



OUR NEW ROLL-TOP DESK.
No. 516.
PRICE, $170.00

ESTABLISHED 1880.

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed post-paid to all parts of the world.

NEW DESIGNS. SUPERIOR WORKMANSHIP. SUPERB APPEARANCE.

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

GRAND RAPIDS DESK CO., MUSKEGON, MICH., U. S. A.

No. 405.—Parlor Table; shaped top, 40x28 inches; made in quarter-sawed oak and solid mahogany; any finish desired. Shipped six in box; 300 pounds gross weight, 33 cubic feet.

Price, oak, each........................$6.25
Price, mahogany, each.............. 8.75

The Finest Factory in America.

BUILT EXPRESSLY FOR EXPORT TRADE.

CAPITAL STOCK, - - - $200,000.00

Manufacturers of

FINE AND MEDIUM GRADES ONLY.

COMPLETE CATALOGUE UPON REQUEST.

Imperial FURNITURE Co.
Manufacturers of
TABLES AND SECTIONAL BOOKCASES
GRAND RAPIDS, MICH., U.S.A.

No. 39½.—Dining Table; round top, 52 inches; square top, 48 inches. Fine selected wood, hand-carved; fillers same finish as tops. Two in box. Gross weight, 600 pounds; average 77 cubic feet.

Prices, with casters, including boxing for export, f. o. b. cars New York:

	8 ft.	10 ft.	12 ft.
Oak, round, each	$28	$31	$34
Mahog., r'nd, ea.	37	41	45

Square, $1 less than above.

No. 58½.—Dining Table; round top, 52 inches; square top, 48 inches. Made of quartered oak and solid mahogany; fillers same wood and finish. Two in box. Gross weight, 600 pounds; average 77 cubic feet.

Prices, with casters, boxed for export f. o. b. cars New York.

	8 ft.	10 ft.	12 ft.
Oak, each	$26	$29	$32
Mahogany, each	33	87	41

Square table, $1 less.

All tables are provided with patent lock for drawing top together and holding base together.
High grade in every respect.

IMPERIAL FURNITURE CO.,

GRAND RAPIDS, MICH., U. S. A.

Order through any responsible commission house.

No. 44½.—Dining Table. Round top, 54 inches; square top, 48 inches. Fine selected quarter-sawed oak, hand-carved. Two in box. Gross weight, 800 pounds; 77 cubic feet average. Prices, with casters, f. o. b. cars New York:

	8 ft.	10 ft.	12 ft.
Oak, each	$87	$40	$48

Square table, $2 less.

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C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.

Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.

Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

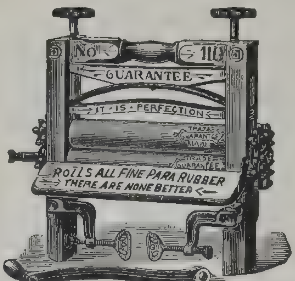
For polishing patent leather shoes quickly and without injury to the leather.

LOVELL MFG. CO.

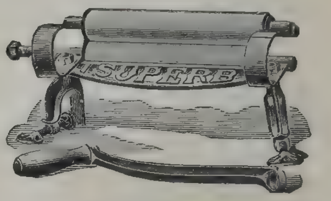
Erie, Pa., U. S. A.
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

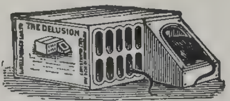
ANCHOR BRAND CLOTHES WRINGERS
RAT and MOUSE TRAPS.



Send for Catalogue and Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade

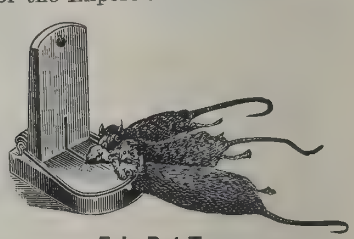


Delusion Mouse Trap.

Requires no setting.

Rex Trap.

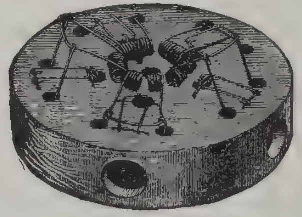
Made in two sizes: large size for rats; small size for mice.



Erie Rat Trap.

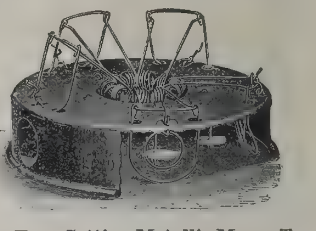
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch."
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker." "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish.



Lovell's Easy-Setting Metallic Mouse Trap

PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3

NOVELTY SELF-CLOSING
CROSSCUP & WEST ENG. CO. PHILA

American Novelties

NOVELTY (SELF-CLOSING) INKSTAND No. 1 (large), retail, - **75 Cents**

NOVELTY (SELF-CLOSING) INKSTAND No. 3 (small), retail, - **35 Cents**

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All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of *Sydney, Melbourne, Adelaide, Barcelona* and *Paris*, for novelty, workmanship, finish, simplicity; utility and cheapness.

WHOLESALE PRICE LIST.

Novelty Paper Fastener, $4 doz.; Keystone Paper Fastener, $6 doz.; Original Paper Fastener, $12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, $1.50 doz.; B B C Paper Clip, $1.50 doz.; Balancing Board Clip, $2, $2.25, $2.50 doz.; Upright Paper Clip, $1.50 doz.; Accumulator Bill File, $1.50 doz.; Standard Pen Rack, 1.75 doz.; Spring Folding Pen Rack, $2 doz.; Combination Paper Weight and Clip, $4 doz.; Pocketbook Postage Stamp Holder, $1 doz.; Automatic Fountain Penholder, $1.50 doz.; Novelty Inkstand No. 1, $6 doz.; Novelty Inkstand No. 3, $3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, $4 doz.; Novelty Hunting Knife, $8 doz.; Novelty Pocket Screw Driver, $4 doz.; Artist's Rotary Kit, $5 doz.; Self-locking Door Indicator, $2.50 doz.; Madame Louie Hair Crimper, $2.50 great gross; Novelty Stitched Hair Crimper, $1.50 great gross; Automatic Fisher, $1.50 doz.; Automatic Towel Holder, $1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, $4.80 doz.; Keyring Door Securer, $1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., $1.25 and $1.75 doz.; The Masticator, $1.75 doz.; Duplex Can Opener, 30c. doz.; Universal Wardrobe Shelf Bracket, $1.50 doz.; Double Match Box, Bracket, $2 doz.; Universal Washer Cutter, $8 doz.; Novelty Pen Puller, 40c. doz.

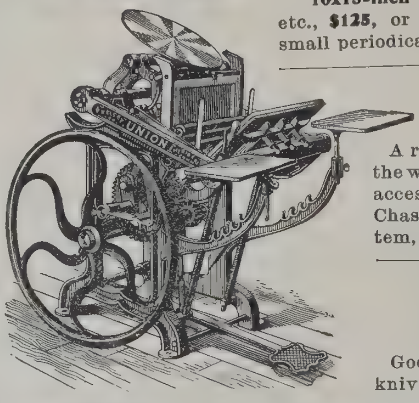
Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

CHEAP PRINTING.

Hand presses, easy to use by man or boy. Typesetting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **$125**, or with more type, rules, etc., for small periodical, **$200.**



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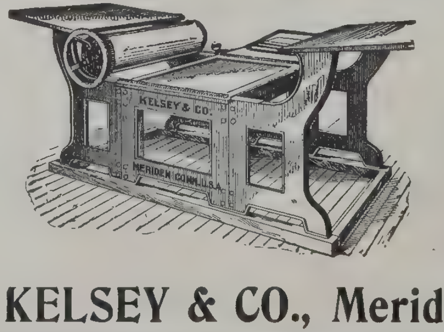
A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **$12.00.**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MERIDEN CONN. U.S.A.

Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches, Price, **$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

GOODS WELL DISPLAYED IS HALF THE BATTLE WON!!!

GRAND RAPIDS FIXTURES CO., MANUFACTURERS OF K.-D. (KNOCK-DOWN) SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is **Our Leader for Foreign Markets**, and is just the thing for displaying **Furnishing Goods Chemists' Sundries, Dry Goods**; in fact, is well adapted for the **display of any line of goods.**

SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track, It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel plated, adjustable shelf brackets

SPECIAL EXPORT OFFER.

Upon receipt of $42.00 in U. S Gold (or its equivalent), we will box, ready for transportation abroad, and deliver F. O. B. New York City, **one of our No. 31 Show Cases as shown.** Net weight, 248 pounds; gross weight, 384 pounds. K.-D. for export measures 28 cubic feet.

☞Our Catalogue, illustrating and describing the various styles and sizes of **K.-D. Show Cases** manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.

Grand Rapids Fixtures Co.'s Show Case No. 31

GRAND RAPIDS FIXTURES CO., GRAND RAPIDS, MICH., U. S. A.

BENTLEY & GERWIG FURNITURE CO.,

Manufacturers of the

BEST OFFICE DESKS AND WARDROBES IN THE WORLD FOR THE MONEY.

THAT'S ALL WE CLAIM.

Export our specialty. Our patented knock-down device makes it easy to set up our Desks in 10 minutes.

POSITIVELY GUARANTEED TO BE THE BEST DESKS IN THE WORLD.

Prices range from $10.50 to $40.00 on Roll-Top Desks and from $7.25 to $17.50 on Flat-Top Desks. Wardrobes from $5.75 to $19.00.

All prices are for goods packed for export. Write for catalogue.

BENTLEY & GERWIG FURNITURE CO.,

Cable Address, "Lonbent." PARKERSBURG, W. VA., U. S. A.

BORN & CO., Columbus, Ohio, U. S. A.

BREWERS and EXPORTERS of

BORN'S CELEBRATED XX PALE and MUENCHNER BEERS.

The Absolute Purity and Superior Flavor of Our Beers Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts Born's Muenchner, packed in barrel
3 " " " XX Pale " " " } **$10.00** net cash, F. O. B., N. Y.

5 doz. pints Born's Muenchner, packed in barrel
5 " " " XX Pale " " " } **$10.00** net cash, F. O. B., N. Y.

OFFER No. 2.

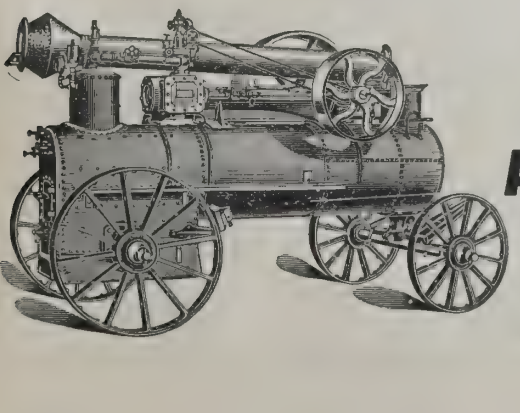
6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), **$9.00** per barrel, F. O. B., N. Y.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.



A. B. FARQUHAR & CO.,

Cotton Exchange Bldg., New York, U. S. A. Cable Address: "Fenankle," N. Y.

MANUFACTURERS OF

Agricultural Implements and Machinery

including **Engines and Boilers**—Vertical, Horizontal, Stationary and Portable; **Threshers**—for Wheat, Oats, Rice, Etc.; **Circular Saw Mills; Plows**—Steel and Cast Iron; **Cultivators**—Walking and Riding; **Harrows; Grain Drills**—suitable for every Country; Etc., Etc.

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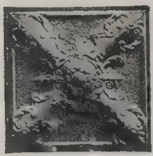
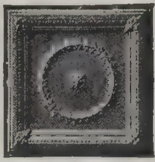

Louis XIV.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Exclusive and Artistic Designs Appropriate for Any Style of Architecture.

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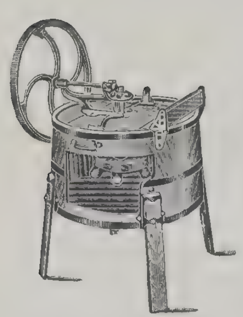
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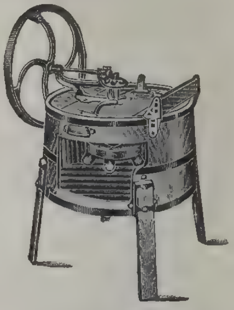
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Wash the clothes as easily and cleanly as sea waves wash the beach.

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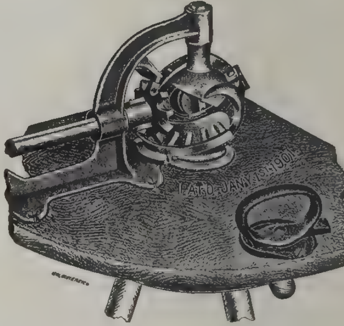
THERE IS NO FRICTION.
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"THE SUN NEVER SETS UPON"

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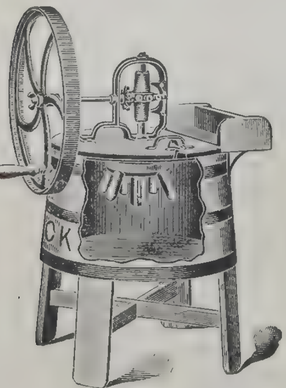
KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

The O. K. is the KING of ROTARY WASHING MACHINES! Because: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1. The **O. K.** is the only **Rotary Washer** that has **Revolving Steel Ball Gearing,** reducing the friction and thus making the machine so **light running** and **almost noiseless.**
2. The tub is made of **Louisiana Red Cypress** lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
3. **The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.**
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5. The tub has a wringer box, fastened with steel brackets.
6 The lid on tub closes tight, no escape of steam.
7. Has gilded hoops, castings and name.

Prices quoted F. O. B. New York. Each **O. K. Washing Machine,** crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet

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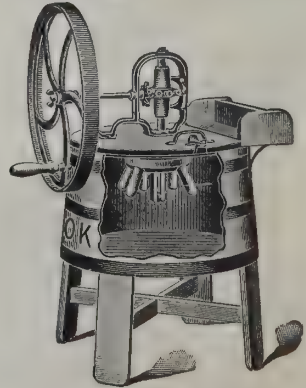
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Lamps for Lighting Streets, Stores, Parks, Wharves, Mines, Plantations and Private Houses.

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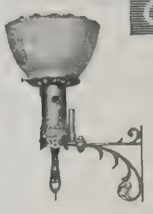
No. 190x. Outside Lamp; outfit with tank; 2,000 candle-power; 30 inches.



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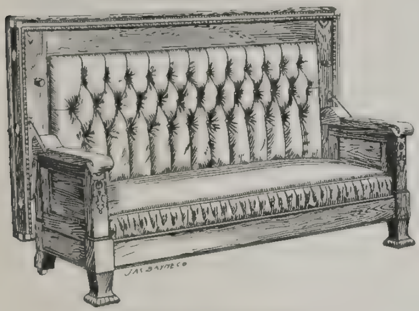
No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

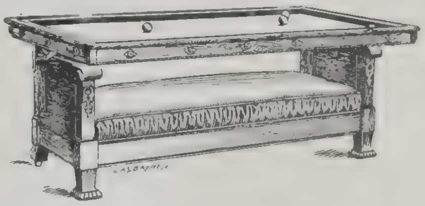
Note—The prices here quoted, U. S. Gold or its equivalent, are for **Foreign Markets Only,** and include boxing ready for steamer, delivered f. o. b. cars at New York City.

Style "C," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

Style "C," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, **$95.00.** Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4′x8′x6′; 32″x36″x6′.



Style "C," as a Davenport.



Style "C," converted into a Billiard Table.

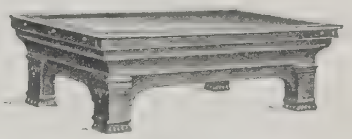
Standard Billiard Tables.

"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, **$125.00.** Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4′2″x8′2″x8″; 4′x8′2″x2′.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, **$90.00.** Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4′x8′x8″; 3′6″x6′x2′.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order.

"Benedict" Special Billiard Table.



"Den" Special Billiard Table.

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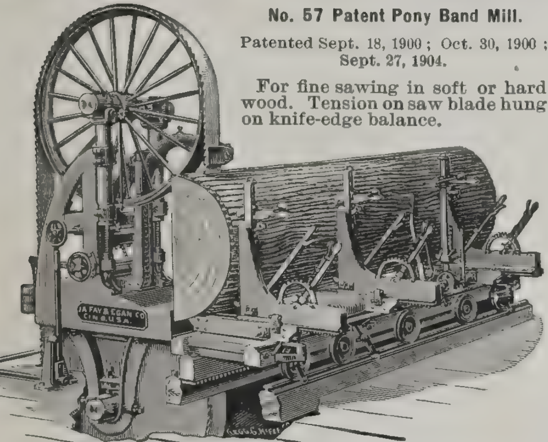
No. 57 Patent Pony Band Mill.

Patented Sept. 18, 1900; Oct. 30, 1900; Sept. 27, 1904.

For fine sawing in soft or hard wood. Tension on saw blade hung on knife-edge balance.



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Or, Why Some Lumbermen Prosper—and Others Don't.

The Circular Mill takes out an average of 5-16 of an inch saw kerf.
This BAND Mill, with an 18-gage blade, about 1-16 of an inch.
A gain of 4-16 of an inch in every cut.
A saving of 20 per cent.
An inch of good lumber in every five cuts.
20 cents on every dollar of lumber cut.
A great saving in ANY kind of lumber—but what a saving in FINE lumber!

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SEND POSTAL NOW!

Now don't you think such a money-saver is worth inspection? Besides, it's safer to operate, does faster work, and does it much better.

Write for copies of letters we have received from those who are now using it. "The proof of the pudding," etc. You will see why your competitor is running out of your sight. It's all in the mill—and here it is.

HEAR THIS: "To say your mill pleases me, hardly expresses it—I thought the mill would probably increase my capacity 50 per cent., but I now believe it will DOUBLE the capacity of my old mill."

Another says: "We are cutting almost exclusively 3-8 quartered oak on it, and any mill man knows that a mill runs about right to cut stock thin as that accurately."

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PAINTING AND WHITEWASHING MACHINE.

"DOES THE WORK OF TWENTY MEN."

WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR.

The Spramotor has been adopted by the Russian, Canadian, Belgian and New Zealand Governments, as well as in the Experimental Stations of Ontario, Manitoba, Quebec, Nova Scotia, British Columbia and many of the States within the United States of America.

NOTE.—The prices quoted, U. S. gold or its equivalent, are for **Export only,** include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

Spramotor No. 0, Outfit G, with ten feet of hose, hand valve and eight-foot iron extension pipe, patent drip guard and one Spramotor nozzle. Net weight, 22¼ pounds; gross weight, 41 pounds; boxed, 12x12x34 inches. Price, complete	$ 8.00
Spramotor No. 0, Outfit G, price per dozen	90.72
Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65¼ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete	15.00
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These machines will apply any kind of COLD WATER or OIL PAINT.

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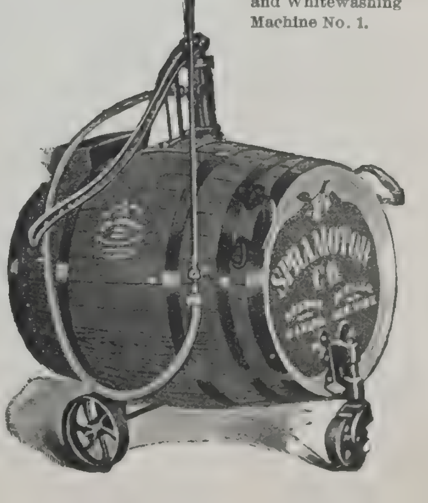
For INTERIOR use (white), in 400-pound barrels, price per ton, **$42.00.**
For EXTERIOR " " " " " " " 90.00.

Spramotor Painting and Whitewashing Machine No. 0. Outfit G.

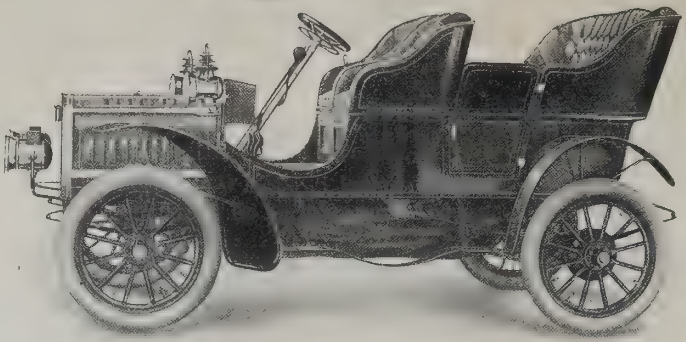


Spramotor Painting and Whitewashing Machine No. 1.

THE SPRAMOTOR CO., Manufacturers, - London, Canada.

Cable Address: "Spramotor," London, Canada. Codes: Directory, A B C 4th, and Western Union.

Rambler



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16 H. P. **$1,350.** Immediate Delivery.

In this vehicle the speed is regulated by the throttle attached to the steering wheel, requiring only one hand to steer and control. The air-regulating device economizes gasoline. The ignition is timed automatically by a governor in exact requirement to the speed of the engine. No internal or fibre gears. 90-inch wheel base, with pressed steel frame. Movable steering pillar. Side entrance to body. 16 h. p. $1,350, complete with two oil side lamps, a tail light, two gas head lights with separate generator, brass tube horn, tools, oilers, pump and repair kit. Packing and freight to New York, $62.50; to San Francisco, $167.50. Often we can obtain lower rates to these ports by handling shipment to final destination.

The working idea of the RAMBLER factory is to make and put together mechanism that any one with good sense can manipulate, and to sell at the lowest price consistent with good workmanship. Great capital and an experience extending over a generation make this possible.

We will be pleased to send a copy of THE RAMBLER MAGAZINE and other printed matter free, upon request.

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Double Engine Tractions

In THREE Sizes:

20 H. P.	-	Weight, 9½ Tons
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Boxing for Export will increase weight 20 per cent.

Hauling Capacity, = 15 to 25 Tons,
BESIDES FUEL AND WATER.

They use Wood, Coal or Straw for fuel.

Toronto Engraving Co.

These Engines Always Give Maximum Power.

Where the reduced speed of a single engine will stall it, **the Double Engine walks right along.**

Wheels (22 to 28 inch face) shown are for Threshing and Plowing Tractions.

Special Wheels for Freighting.

Boilers are of ample size. With indifferent fuel under severest stress will blow off.

Engines on "belt-brake" show easily 40 to 60 per cent. increase in power over above rating.

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[Founded by HOWARD LOCKWOOD & Co., 1877.]

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RESULTS OF THE ELECTION.

WHILE the result of the election held in the United States on November 8th had been clearly foreseen by careful observers of political conditions, the vote by which it was accomplished proved a surprise even to the victors themselves. President Roosevelt was elected by a plurality of over two million of the popular vote, and his majority in the Electoral College is the largest given to any candidate for the Presidency in the last thirty years. He carried the States of Missouri and Delaware, which almost invariably cast their vote for the opposition, and divided the vote of Maryland, another State which usually votes the same way. His party has gained three or four members in the United States Senate and more than doubled its majority in the House of Representatives, which is the popular branch of Congress.

The significance of these results, so far as they are of interest to readers of THE AMERICAN EXPORTER, is easily explained. President Roosevelt and his party have won on a declaration distinctly pledging them to the protection policy, to the retention of all the territory acquired by the United States since the Spanish war of 1898, to the speedy construction of the Panama Canal, to the steady increase of the United States Navy and to the maintenance of the gold standard as the basis of American finance.

The party of the opposition took the contrary view on all those issues save in the case of the Panama Canal and the gold standard, and consequently the result of the contest is commonly regarded as a vote of confidence in the governmental policies now in force. Either because of those policies or in spite of them, the United States has prospered wondrously since they were instituted, and the vote by which the present administration is granted a new lease of power was undoubtedly prompted in some degree by a widespread belief that the wise course was to let well enough alone.

Surface indications point to a substantial improvement in American business conditions, and, as a matter of fact, the improvement was perceptible in many important departments of enterprise while the political campaign was still in progress. The country was averse to change. It dreaded an experiment with untried policies. In a word, the prosperity argument was in favor of the administration, and the administration won a victory which has no parallel in the history of American politics.

It is probable, therefore, that the ensuing four years will witness few if any radical modifications of the fiscal and commercial policies instituted by the late President McKinley and since upheld by President Roosevelt.

There is, however, some reason to hope for a moderate revision of the present tariff schedules of the United States looking to lower duties. The present tariff law contains inequalities which are frankly acknowledged by some of the ablest supporters, and the need of a readjustment in the interest of fair trade is well understood by various leaders of the protectionist party. The feeling in favor of a revision which shall reduce the duties on articles the production of which in the United States is controlled by trusts or monopolies is so pronounced that it cannot be long ignored except at the risk of provoking grave dissension among the protectionist advocates.

President Roosevelt's attitude toward the question of tariff reform has not been disclosed. Before his entrance into the service of the National Government he was an avowed low-tariff advocate, if not an actual free-trader. Whether his views have undergone any modification since then is a matter of conjecture. His position since he became President has, however, been one concerning which he has been extremely sensitive. Inasmuch as he was not elected President in 1900, he has felt that, when promoted to that high office by the tragic death of President McKinley, it was his duty to carry out the policies instituted by the latter, one of them being embodied in the present tariff law.

The fidelity with which he has performed that duty is universally recognized, and it discloses a trait of character which his countrymen, irrespective of party affiliations, sincerely admire. Now, however, he has been declared President for four years, beginning March 4, 1905, not by tragedy or accident, but by the overwhelming vote of the American people, and he will enter upon his full term with absolutely no obligations save to his conscience and his country. Consequently, if he retains the views on the tariff which he held not many years ago, he may confidently be expected to declare them in his messages and urge them upon Congress with the frankness and courage which have uniformly distinguished his official acts.

Speaking broadly, the results of the American election of 1904 are such as should inspire increased confidence among other nations in the stability, intelligence and moral and commercial integrity of the United States. They signify that the obligations of the United States to the interests of peace, commerce and civilization throughout the world shall be sacredly fulfilled. They mean also that popular institutions, based on the lofty principle of "government of the people, for the people and by the people," have been newly vindicated in the cheerful acceptance of electoral results by all parties to an electoral contest involving 15,000,000 patriotic voters, representing 80,000,000 free Americans.

THE SLAUGHTER SHOULD STOP.

IN the manifold discussions, from various points of view, on the possible or probable termination of the Russian-Japanese war, the point of view of mercantile interests should not be lost sight of. General Sherman's emphatic pronunciamento, "War is hell," is almost, if not quite, as apropos when applied to considerations of trade as to material, moral and spiritual conditions.

Count Cassini, the Russian Ambassador at Washington, is quoted as saying that "Russia will pursue the war in the Far East to the bitter end—that is, until Russia has conquered. . . . When the prestige of a country is at stake, all other considerations are and must be set aside."

Now, if Russia is only fighting for prestige, it is unfortunate, to say the least, that she doesn't carry her fight off to the North Pole, and not interfere with the peaceable concerns of all the nations of the earth. Russia's prestige, at this stage of the operations, is an infinitesimal quantity, and of no interest whatever to anybody but her official family. The material losses to Russia are of far greater moment, while the material losses to the world at large are simply incalculable.

The neutrality declared by the various nations precludes their shipping articles which are contraband of war—an elastic kind of term which may be extended to cover food exports, clothing, etc., etc., all of which lines of trade are necessarily crippled.

In other fields, that of cotton manufactures, for instance, Matthew C. D. Borden, the "Cotton King," is quoted as saying that the war is responsible for the present paralysis of the cotton industry in Manchuria, Russia, Japan and nearly all the recently developed Eastern markets. What is true of cotton is true of other manufactured products which have a foreign trade.

Since no considerations of expediency, no dictates of diplomatic policy, no appeals to humanity, and no exhortations of religion have had any effect in abating or exterminating the horrors of the present struggle; since peace congresses, President and Pope have all failed to bring about even a temporary cessation of hostilities, would it not be at least worth the trial for the united mercantile and trade interests of civilization to present the argument of the almighty dollar and see what effect it will have upon the warring nations?

INTERNATIONAL COMBINATIONS.

THAT the tendency toward industrial consolidation is not confined to the United States is again demonstrated by the agreement recently entered into by the steel manufacturers of Great Britain, Germany, France and Belgium to regulate the export trade in steel rails. The details of this agreement have not yet been fully discussed, but it is understood that they provide for an equitable apportionment of all export orders for steel rails among the mills of the four countries named, the division being based on a total annual output of 1,300,000 tons. It is explained that this combination was formed partly to avoid any hurtful cutting of prices and partly to enable the contracting parties to meet possible American competition for foreign orders. It is described as an international combination for offensive and defensive purposes.

From the American viewpoint this arrangement is at once unique and instructive. It is a recognition, perhaps wholly unmeant, of the commanding position which the United States has gained in the steel industry. It is the first time, we believe, that the manufacturing interests of four nations have found it necessary or desirable to pool their influence for defense against competition from a fifth nation whose mill-owners have never considered it needful to form an international agreement to control production or prices.

The scheme is legitimate as trade combinations go nowadays, but if recognized as a precedent it might lead to future combinations of serious consequences to the countries concerned in the present deal. Suppose, for example, that the manufacturing interests of the United States and Great Britain should agree to pool the export trade in steel rails and various products of iron—is it not conceivable that such an arrangement might seriously disturb competing industries in continental Europe? Or suppose that the United States should enter into a similar combination with France, Germany and Belgium—how would that deal affect the steel industries of Great Britain in the markets of the world?

The tendency toward industrial consolidation is undeniably strong in the United States, and seems likely to develop grave conditions in the economic and political life of the nation. But it has not yet gone to the extreme of seeking international combinations of competing interests like the one under review. That combination, indeed, marks the farthest advance of the policy of trade concentration against competitive enterprise, and it shows clearly enough that in the formation of trusts Europe is fully abreast of the United States and perhaps a trifle ahead.

THAT aerial navigation is fast becoming a matter of practical importance and leaving the purely theoretic stage is shown by the fact that the recently organized New York Motor Club's constitution states that the object of the association is "to encourage the interests of motoring on land, water, and in the air." The new club is composed of a number of well-known automobilists and owners of auto-boats, many of whom are amply able to give generous financial assistance toward the practical development of aerial sport.

THE Standard Oil Company are *only* paying 36 per cent. in dividends upon their huge capitalization this year. Too bad!

ADAPTABILITY OF AMERICAN MANUFACTURES.

WHY is American farm machinery more nearly suited to the conditions prevailing in South Africa, Australia, New Zealand, Canada and other countries than machinery made in Great Britain or Germany? Why is it that this colonial empire prefers American railroad construction and rolling stock to that of the mother country? Nay, more, why does England herself come to the United States for equipment, as she did in her South African campaigns?

It should always be borne in mind that the American colonies were the first real experiments in practical colonization made by the motherland, and that although the Declaration of Independence severed the political connection of the twain it did not wipe out the preceding century of *colonial experience* or change the *inherited national temperament.*

When the "Mayflower" steered her course for these inhospitable shores and the Pilgrim Fathers landed upon Plymouth Rock they encountered problems which differed only in kind from those now being fought out by scions of the same sturdy stock in the vast wilds of British Africa. When our own people upon the prairie lands of the boundless West discovered the potent possibilities that lay in operating great numbers of labor-saving harvesting machines, they not only added to their own comfort and efficiency, but they also furnished a practical example which their ancestral brethren in other lands might follow with like profit. Moreover, in modifying old-world inventions to suit the novel conditions of a virgin country, America has passed through the fiery ordeal of experience and practice and has become fully qualified to advise other nations and to supply their actual wants.

The railroads of England are most admirable and well suited to her needs, but their elaborate construction, involving an immensely disproportionate expense for an unsettled country, absolutely precluded their adoption by the new world. But when America adopted the basic idea, but narrowed the gauge, lightened the rolling stock and gave her engineers more latitude in economic construction of lines, only a beginning was made. We now have a system of railroad construction and rolling stock that is radically different in nearly all of its details from the foreign.

When we consider that the local conditions in most of Britain's colonial dependencies are practically identical with those encountered by the founders of the American system of railroading, it is not surprising that these colonies have patterned and equipped their railroads after the American plan.

The same course has been pursued in regard to wagons, grist and other primitive mills, churns, harness and saddlery, hunters' traps, camp fittings and agricultural tools.

The Anglo-Saxon race has always been quick to absorb and utilize anything other races have had to offer that seemed better than our own. This instinct, if we may be permitted to so term it, is always quickened by colonial needs and necessities. Even the farmer fresh from England soon sees the advantages offered by American-made tools and machinery in his new environments.

AN American millionaire has chartered a big British-built steam yacht and is taking a party of guests of divers nationalities upon an extended cruise to include a 1,200-mile sail up the Amazon. And yet there are some who persist in declaring that the universal brotherhood of man is a myth!

STILL another record broken. Exports of lumber from Gulfport, Miss., for the first four months of the current fiscal year show a gain of over 100 per cent. over the same period in 1903, the shipments amounting to 81,000,000 feet, compared with 39,000,000 feet.

THE New York Chamber of Commerce have just been celebrating their 136th anniversary. Not so youthful and, consequently, inexperienced after all, are we?

EVOLUTION OF THE TRUSTS.

MUCH has been written and said in America about the huge corporations, popularly known as "trusts," and the American people have come to a fairly accurate understanding of their operations and future possibilities.

Like a good many other things in this wonderful land of ours, the American trust is an improvement upon an old-world idea, or, in fact, upon what one might term an ancient-world idea. It must have been very early in the history of the human race that individuals began to combine together for their mutual benefit. In fighting their foes they formed themselves into armies, and in prosecuting industrial enterprises into gangs of workmen, etc.

For many hundreds of years the formation of organizations among merchants, in order to carry on operations of too great a magnitude for any single individual, has been found advantageous if not necessary to success. Notable instances of such combinations are the Dutch East India Company, of the Netherlands, and the Honorable East India Company and the Hudson Bay Company, of England.

The American trust system has advanced along the lines of individual industries or commercial pursuits. Thus we have now what are popularly known as the Beef Trust, the Ice Trust, the Tobacco Trust, the Sugar Trust, the Coal Trust, the Lumber Trust, etc., which practically cover every important line of business. The American trust system aims to *monopolize* an entire line, or, at least, such a large proportion of it as to put serious competition out of the question altogether.

At first glance this procedure might seem exceedingly dangerous to the welfare of the members of the industry affected, in particular, and the community in general, by placing such arbitrary power in the hands of the few master minds at the head of such organizations.

That this power has, in some instances, been abused is admittedly true, but that the American people will allow a notorious abuse of power to continue indefinitely is not true. The records of Congress and the several State Legislatures furnish abundant proof of this statement.

No great advance in the general welfare of a people seems to be possible without the infliction of hardships upon some individuals. This may arise either from the viciousness and unscrupulousness of leaders and subordinates, or from the inconvenient and oftentimes demoralizing readjustments that follow important interests in industrial or civic institutions.

The French and American Revolutions, in history, and the introduction of the cotton gin and other labor-saving machinery, in the department of industries, furnish admirable examples of this truism.

The introduction of the trust system in the United States has not been exempt from this rule, although it can truthfully be said that its gradual growth and closely watched movements have reduced the amount of demoralization and suffering to a minimum. A trust, as now defined in commercial or industrial affairs, is a consolidation of a majority of the most important concerns or individuals in any line of business into a single corporation. As can readily be understood, the trust can do a larger business upon the combined capitalization of all the smaller concerns absorbed than these concerns could do individually.

Moreover, by the elimination of middlemen, the immense economy possible by condensation of working forces, the ability to secure raw materials in great bulk at proportionately reduced rates, and the savings effected and power given by ample cash capital, the trust is able to vastly reduce the cost of its product, and supply consumers at a smaller price than before.

Some novel phases of the trust problem are dealt with by L. H. Rogers in his classic work, "The Kite Trust," in which he says: "Formerly, five hundred firms in our country (averaging three partners to a firm) were engaged in fierce competition in the same line of business, whereas at the present time only one great trust or corporation aims to control, or, can be arranged to control, an entire specialty. * * * Statistics show that only two men in a hundred have succeeded in commerce—that is, held on to their fortunes and died rich. Consequently, if in one line of business there was one gigantic corporation or trust instead of the previously mentioned five hundred firms, with their average of three partners in each firm—or a total of one thousand five hundred partners—then in the same ratio there would in a generation be only thirty men of real business genius out of those one thousand five hundred partners who would be successful; which means that by the formation of all the rival concerns into that one particular gigantic trust, the other one thousand four hundred and seventy partners would be prevented from future disastrous failure, which would have resulted in their finally entering bankruptcy. * * * By transferring all the business of five hundred wholesale firms engaged in one line of manufacturing to one giant corporation or trust, the many useless expenses that can be saved can (if statutes are provided for it) be directed to lowering the price to retail buyers, thus benefiting mankind."

But where is this centralization of business going to end? We have already had many smaller trusts, in branches of a similar line, merged into still larger trusts and there seems no logical reason to prevent still further mergings and enlargements.

ARBITRATION FOR ALL.

AMERICAN good faith in arbitration as a means of adjusting international controversies is clearly manifest in the present attitude of the United States. The announcement of the Government at Washington that it is now preparing a set of arbitration treaties with all the countries which desire to enter into such agreements, has been promptly followed by the negotiation of a treaty with France, and preliminary steps toward a similar arrangement with Germany. It is unofficially stated that treaties of the same character will presently be concluded with Great Britain and Mexico, and that several of the republics of Central and South America are desirous of negotiating along the same lines.

It is the expressed desire of the United States to establish an understanding with every responsible government in the world whereby all matters in dispute shall be submitted to arbitration. The traditional policy of the United States is peace. It has eagerly assented to every proposal calculated to bring the nations of the earth together in mutual agreements providing for the settlement of their differences by peaceable processes. Having virtually taken the lead in this movement in approving the arbitration of the Alabama claims, it has steadfastly held to that position. Therefore the negotiation of a separate treaty of arbitration with every nation desirous of it is strictly in accord with American policy and precedent.

Apart from their political significance these treaties are extremely important. In so far as they diminish the likelihood of war they will increase the security of international commerce and intercourse. By promoting amicable relations among nations they will foster the growth of trade and enhance the interests of the business world. Wars are the worst disturbers of commercial tranquillity and progress. They embarrass the traffic of neutral nations, depress inoffensive industries and impose serious hardship upon blameless victims.

Obviously, therefore, any policy designed to discourage war and replace it with more humane methods of adjudicating international difficulties deserves the cordial approval of business interests throughout the world. For that reason we believe the effort of the United States to establish arbitration agreements between itself and all civilized nations will be recognized as a plea for peace and for commercial security, and which mankind will heartily applaud.

It is not unlikely that the negotiation of these treaties of arbitration may open the way for reciprocity treaties looking to more amicable trade relations between the United States and other countries. Of the twenty-three reciprocity treaties and agreements which the United States has entered into with various powers since 1854, only four are now in force, namely, those with Germany, Portugal, Italy and Cuba. The opportunity is a great one—so great, indeed, that a farsighted government will hardly neglect it.

THE ST. LOUIS EXPOSITION.

IN many respects the St. Louis Exposition, which closed its doors December 1st, was the most notable ever held. It not only covered a greater area, but in the number and variety, if not in the quality of the exhibits, it has not been surpassed. While there is a difference of opinion as to whether the fair city, as a whole, was more beautiful than the famous "white city" of the Columbian Exposition at Chicago, it is generally agreed that the architectural details of the several buildings were of a much more artistic character.

In point of attendance, the Exposition did not reach the record made by either the Chicago or the Paris Exposition, and in this regard was, no doubt, a disappointment to its projectors. Nevertheless it was visited by about 20,000,000 of people, a majority of whom reside within a thousand miles of St. Louis.

Nothing in recent years has been so effective in demonstrating the greatness of the United States and its resources. So far as the Eastern States were concerned, the people of that section hardly knew that a World's Fair was being held in the country. They read about it in the newspapers, but comparatively few of them took the trouble to journey to St. Louis to see it. Perhaps it is because they have been surfeited with big fairs. Many of them visited the Chicago and the Pan-American Expositions, and quite a number the last Exposition at Paris. They either did not care to spend the time and money in making the trip to St. Louis, or they regarded the fair as merely a repetition of what they had already seen, and were not, therefore, interested in the enterprise.

Then, too, the fair was held in a far inland city whose summers are much warmer than those of cities along the seaboard and farther north. This objection, no doubt, prevented many from attending the Exposition during the vacation period. Finally, it should be remembered that the great cities of New York, Chicago, and Philadelphia are themselves veritable world fairs. A week's stay in New York, for instance, offers the visitor far greater entertainment than half a dozen of these colossal expositions. If given their choice, nine out of every ten persons in the United States would prefer a trip to New York to a visit to any fair that can be held on this continent. In the West, however, the case was different. A new generation has arisen since the last World's Exposition was held in America and millions of people from Europe and the East have settled within its domain. With the development of its resources and the establishing of its numerous and growing cities, there has been created a wonderful thirst for knowledge, especially among the young people. These seized upon the St. Louis Exposition as a great educational institution whose advantages for learning what the world is doing in manufactures, in art, in science, in agriculture and in the many other departments of human endeavor, and visited it in large numbers.

Probably no part of the great fair attracted so much attention as the electrical display, which undoubtedly was the most complete ever assembled. In no industry has such remarkable progress been made in the last thirty-five years as in the field of electricity. The secrets of subtle fluid whose very existence was unknown to the inhabitants of the earth for two thousand years have been so thoroughly mastered by man that it is now controlled and made to labor for him with as little effort as steam. The applications of electricity to the world's work have become so numerous that it is difficult to discover any mechanical task that it cannot perform. It drives machinery, carries messages, propels cars, furnishes light and heat, heals diseases, and performs a thousand other important tasks. Every university, every college and every technical and academic school in the country provides a special course for the study of electricity. Hence the widespread interest in the subject that manifested itself among the visitors to the St. Louis Exposition, where ocular demonstrations of its adaptability and power were lavishly displayed. Farmers, mechanics, professional men, railroad employees, teachers, engineers, housewives and others engaged in nearly all the occupations in which men and women are employed, found profit as well as pleasure in examining the exhibit. They saw for the first time, messages received and sent by Marconi's system of wireless telegraphy, and went home duly impressed with the skill of the inventor and with the possibilities of this wonderful creation.

One of the most significant features of the St. Louis Fair was the series of aeronautic contests held on the grounds. It is true that the results were somewhat disappointing to those who had hoped to see the problem of aerial navigation solved by an American engineer, but, nevertheless, they showed that great progress has been made and that we are nearer its solution than ever before. As some of the leading scientists and inventors of the world are devoting their entire time to the subject it is not unreasonable to believe that by the time the next world's fair is held in America a dirigible and commercially successful air ship will have been constructed.

It is not our purpose at this time to enter into a detailed discussion of the merits or demerits of the St. Louis Exposition. It is sufficient to state that such enterprises are highly profitable both as educational and commercial factors in the nation's development, and that in these respects the Louisiana Purchase Exposition has had no superior in the history of world's fairs.

AUTOMATIC TRACK LAYING.

UNDER the perfected system of track-laying machinery now in use in the United States, the human-labor method of building railroads may become obsolete. There is now to be had a variety of appliances that not only lay the rails and ties but which also prepare the roadbed and do the ballasting. The work is performed automatically.

One of the many devices in use may be called a track-laying train. All the apparatus is carried on a construction train which moves forward as fast as the rails are in position. The ties and rails are on a moving platform which drops the former across the roadbed in proper position; the rails are carried forward in the same order and require but a few spikes to hold them securely while the train moves slowly along over the newly made track.

With facilities now in use, three miles of roadbed (ties, rails and necessary adjuncts) are readily constructed each working day.

This present method is not only adapted to the steam railroad, but may be utilized generally with modifications and improvements which are quite sure to result from the innovation.

As a labor-saver, and consequently a money-saver, to say nothing of the time which is gained, the appliances referred to are apt to find a ready market, if not universal adoption.

ERNEST E. LYONS, United States Minister to Liberia, has been doing active missionary work looking toward the establishment of a direct steamship line between New York and Monrovia. Before his departure for Liberia he stated that the prospect was favorable for the operation of at least one steamer by a local firm. It is Minister Lyons' opinion that a large trade in American cloth, shoes and other lines can be quickly built up. Such enterprise is surely most commendable and deserving of substantial support by all interests likely to benefit therefrom. The dominant circles in Liberia are distinctly American in their feelings and prejudices, many of them being emigrants from this country. Even the large proportion of West Indians among them appreciate the advantages of American-made goods and are already acquainted with their merits.

THERE is likely to be a large increase in the manufacture of bicycles in the United States of America next year. Determined and successful efforts have been made to restore the bicycle to its old-time favor. Several large concerns devoted to the making of such vehicles have been reorganized, and it is freely predicted that 1905 will witness lively times in every branch of the industry.

AMERICAN manufacturers are increasingly eager to make their goods in the designs desired by foreign buyers, to pack them strictly according to instructions and ship precisely as ordered. For that reason they are always glad to receive hints and suggestions from their customers abroad.

Remarkable Speed in Tunnel Building.

IN the history of tunnel building there is nothing to parallel the speed with which the great railway tunnel is being pushed under the Hudson River to connect New York and Jersey City. Every day witnesses an advance of forty-eight feet in the execution of this remarkable project, and, what is particularly striking, is that not a carload of earth is being dug out to make room for the tube. By a method which is unique in engineering experience it is being driven—literally driven—through the mud 25 feet under the river bed. Already it has shouldered its way more than half a mile out from the Jersey shore.

The first, or north, tube of the two of which the tunnel proper consists, had been carried more than half-way to the Manhattan shore by engineers who had attempted the task before the present company took it up. They had proceeded by the ordinary method of tunneling and had failed. The new company found it easy, however, to complete their work, and now the southern tube is being pushed under the river without excavating or digging of any kind.

It is done just as a child pushes a stick into soft earth, the head of the tunnel being pushed constantly forward by powerful hydraulic jacks. It marches at a steady gait of 2 feet at a stride, but it is an illustration of the forces which modern engineering can command that each stride is made under the pressure of some 1,500 tons directed against a circular space no more than 17 feet in diameter.

The method is the invention of Charles M. Jacobs, the engineer to the company. It is characteristic of the way in which scientific skill overcomes natural obstacles that the very softness of the ground which caused every previous attempt at building the tunnel to end in hopeless failure has been turned to such advantage that it is responsible for a speed of construction which engineers hitherto would have said was impossible for any such work.

Now that the method has been tried and proved a success, it seems to be simplicity itself. The shield which forms the head of the tunnel differs little from those usually employed for tunneling, though it has been specially braced and strengthened in view of the enormous pressure to which it is subjected. It is about ten feet in length, the front part being armed with the ordinary cutting edges running round the rim. A wall is built across it 5 feet from the after end; around the circumference of this are sixteen hydraulic jacks. Each one of these jacks is capable of exerting a pressure of 5,000 pounds to the square inch, though it is seldom that the full power is exerted.

The tunnel itself is made of cast-iron segments, 6 by 2 feet, which are bolted together through flanges that run along their edges. Fast as a ring of segments has been constructed, the jacks are placed into contact with the flanges, the hydraulic power is turned on, and, using the completed tunnel as a base to push against, the whole shield is slowly driven forward through the river mud, which it forces away on every side. The "tail" of the shield—the 5-foot space behind the after wall—fits over the end of the tunnel proper like a cap, keeping the whole water-tight and clean.

The men never see the ground through which they are forcing their way, and the greater part of their work consists in bolting the segments together as the shield moves forward and leaves within its tail the space for a new ring. Each of these rings, as has been said, is 2 feet wide, and the average rate of progress made by each shift of eight hours is eight 2-foot rings, or 48 feet of tunnel in a day of twenty-four hours.

The shield is part of an airlock nearly 1,000 feet long, but though the men are working under an air pressure of about twenty-six pounds to the square inch, inasmuch as they are inside the hermetically sealed funnel made by the iron-ribbed tunnel and the shield, they are absolutely safe from all the risks of flooding or cave-ins, such as those engaged in tunneling under rivers in the usual way have to guard against most carefully.

In building its New York approaches to the tunnel the company has encountered different and unusually difficult conditions. The ground through which the men have to dig is made up of loose sand, and, though it is easily worked, it has so little consistency that the risks of a cave-in are great. Moreover, the tunneling is being done under streets lined with rows of heavy buildings, and any disturbance of the ground beneath them is likely to lead to a shifting of the sand and the consequent moving and destroying of the foundations of the houses. The greatest care has been taken in moving forward, an air-lock with compressed air being used as one means of keeping the sand in place, while an elaborate system of sheeting is kept constantly against the face of the tunnel.

When the shield is to be pushed forward a few of the sheeting planks are removed and a ring is dug out around its edge to a depth of about two feet. This is filled with clay, which, as the edges of the shield are driven forward into it, settles round and forms a seal. It is possible, then, to remove the rest of the sheeting and excavate the sand in the ordinary way, this method insuring that only the ground which is actually to be taken out is disturbed.

May Ship Government Building to Washington.—Readers of THE AMERICAN EXPORTER who visited the St. Louis Exposition and who remember the beautiful building erected there for the use of the United States Government will be interested to know that it is proposed to move the structure to the city of Washington. One of the important uses for which the structure is desired is to provide a place for inaugural balls. Contractors have said that the building can be taken down, shipped to Washington and put up in time for the inaugural ball next March. The cost of moving and rebuilding, it is estimated, will be about $400,000.

The Lewis and Clark Exposition.

WITH the close of the Louisiana Purchase Exposition at St. Louis, December 1st, public interest is directed to the next event of a similar nature—the Lewis and Clark Centennial Exposition—to be held in Portland, Ore., June 1 to October 15, 1905. This enterprise, which is designed to commemorate the one hundredth anniversary of the exploration of the Oregon country by Capt. Merriweather Lewis and William Clark, who commanded an expedition planned by Thomas Jefferson, the President of the United States, will undoubtedly attract a large number of people to the Pacific Northwest.

The Oregon country thus explored passed to the sovereignty of the United States under a treaty with Great Britain, June 15, 1846. It comprised 307,000 square miles of territory and included the present States of Oregon, Washington and Idaho, the western and southwestern parts of Montana and the northwest corner of Wyoming.

The country has proved to be one of the most productive sections of the United States. Its growth in population has been rapid. In 1850 the number of inhabitants in the entire territory was only 13,000. The census of 1900 credited it with 1,200,000. Its present production of grain of different kinds is approximately 65,000,000 bushels.

The proposed exposition will not only represent the whole Oregon country, but will also include exhibits from the entire West. In comparison with the St. Louis World's Fair it will be small, but in some particulars it will doubtless surpass it.

The site selected is located within fifteen minutes' ride of the center of the city of Portland, and embraces 185 acres of land and a beautiful lake covering 350 acres in the midst of which is an island.

More than half of the buildings are now under roof, and it is expected will be completed before January 1st. The remainder will be ready for occupancy early in the spring, and the prospect is that for once in the history of large expositions the buildings and grounds will be finished in every particular before the opening day.

The United States Government will erect a building similar to that occupied by the Government exhibit at St. Louis, and it is reported that the St. Louis Government exhibit will be moved to Portland in its entirety. The buildings will be similar in architecture to those used in the Pan-American Exposition, the exterior painted in ivory white and the roof of red and green tiles.

Assurances have been given to the management that the transcontinental railroads will grant a low rate of freight on goods to be exhibited, and already arrangements are being made by the trunk lines with foreign exhibitors at the World's Fair to transport their exhibits from St. Louis to Portland. It is also expected that a low passenger rate will be made during the entire time of the Exposition.

Increased Earnings in Steel.

AS indicating the improved condition of the American iron and steel industries foreshadowed in the November number of THE AMERICAN EXPORTER, it is interesting to note certain estimates as to the earnings of the United States Steel Corporation for the first quarter of 1905. One authority places net earnings at that time at $30,000,000, and says he does it with the full knowledge that he is aware that such a figure will break all records. He bases his belief on his knowledge of the present condition of the steel markets, and says that he confidently believes that within the next month the railroads of the country will place orders for rails and other products that will eclipse anything in this line before. There are, however, interests which think that the estimate of such a large figure is far too optimistic. When it is recalled that the earnings of the company for the first quarter of the present year were only $13,308,000, and that in 1902, when the steel trade was at its best, earnings aggregated only $26,715,000, it will be seen that there is ground for not readily accepting this very rosy prediction.

There is, however, little doubt that conditions for the present December quarter, compared with the same period last year, are different, and estimates of earnings of $20,000,000 for the period are thought conservative. Last year for the December quarter earnings were only $15,037,000, against almost double those figures for the two previous years.

Foreign Prize Winners at St. Louis.

ACCORDING to the report of the committee having charge of the awarding of prizes to foreign exhibitors at the St. Louis World's Fair, Germany, which ranks third in the number of exhibitors, will receive 1,720 medals, including 1,720 grand prizes. France stands second in the list. Japan, with a total number of exhibitors of about 2,000, has received 1,701 awards, including 155 grand prizes and 356 gold medals, and, in addition to this, more than 400 medals to be awarded to collaborators. Brazil has about 2,300 exhibitors represented at the Exposition. The total number of prizes awarded are 70, gold medals 380, silver medals 580 and bronze medals 520. Mexico's awards number about 1,358 prizes in all, 41 being grand prizes. Mexico is represented by about 2,100 exhibitors. Mexico secured the largest number of prizes for its manufacturing exhibits. The largest number of prizes awarded to any department in the Japanese exhibit is 1,207—in the Department of Manufactures.

Fast Run of an Electric Locomotive.

IN the last number of THE AMERICAN EXPORTER mention was made of interesting tests conducted at Schenectady, N. Y., U. S. A., with a new type of electric locomotive designed for use in hauling passenger trains into and out of one of the great railway stations in the city of New York. Further tests with this locomotive have produced results even more striking than those already reported. These tests are made on a six-mile stretch of road parallel to the main line of the railway. This track is practically straight and is ballasted so as to permit a maximum speed of 70 to 80 miles an hour. It is equipped with all types of third rail, and many experiments will be made to determine the best type of protective covering.

In the course of a trial on November 12th the locomotive, drawing a train of four cars, developed a speed of more than 70 miles an hour. One thing which the experts noticed was the remarkably easy riding qualities of the electric locomotive. It is almost noiseless and naturally is clean. Safety is furthered by the absence of fire of any kind. The machine started freely and easily without sparking.

The main frame is of cast steel and forms not only the mechanical frame of the locomotive, but also part of the magnetic circuit of the electric motors. A central corridor extending through the cab permits access from the locomotive to the cars behind. The total weight of the locomotive is 95 tons and the maximum horse-power is 3,000 tons. The average speed with a 500-ton train is 60 miles an hour. The trains will be heated from an apparatus in the cab. At present the cab contains an extensive set of recording instruments which show on a chart surve, speed, voltage and current input, all on a time basis.

One success of the new machine is the elimination to a large extent of losses of power due to gearing. The builders didn't design the locomotive for abnormal speed, but rather to obtain a high average schedule due to their ability to accelerate rapidly. The chief engineer of the company which built this locomotive says of it:

"The designers have secured in this machine the best mechanical features of the high-speed steam locomotive, combined with the enormous power and simplicity in control made possible by the use of the electric drive. The success of the trials forcibly demonstrated that the steam locomotive has encountered a most formidable rival in a field of which it has heretofore held undisputed possession, and it is the general opinion that in the new locomotive has been found a type whose distinctive features may be accepted as a basis for future standardization."

National Horse Show.

FROM comparatively small beginnings a score of years ago the National Horse Show, held annually in New York, has developed into a truly great equine and social function, that brings together exhibitors and people of prominence, not only from the United States and Canada, but also from Europe.

The official program of the last annual show, held last month at Madison Square Garden, is a bulky volume of nearly three hundred pages and furnishes some idea of the magnitude and importance of the undertaking. The show was open from early morning to nearly midnight on each of the six days of the session. There were one hundred and thirty-four distinct classes judged, in which prizes or ribbons were awarded. Some of these classes had upward of fifty entries.

The interior of Madison Square Garden is in the form of a huge amphitheater, capable of seating 12,000 people, with ample promenade space around the arena in which exhibitions were given. In the center of the arena was the judges' stand. The track was covered with a specially prepared composition of earth, sand, chopped straw and wood shavings, making an almost ideal surface for both horses and vehicles. An army of uniformed attendants kept the surface in excellent condition, without interfering with the comings and goings of the many competing exhibitors and their equines.

The social side of the show was even more popular than ever, and the greater part of the wealth of the country foregathered here during the week. It would take many pages to describe the array of gowns, jewels and feminine loveliness displayed on this occasion. The admittance and box receipts of the association conducting the show were the largest in its history. Owing to the large amount of money awarded in prizes and expended for the hire and equipment of the hundreds of trained attendants in all departments, and for the rent of the garden, the profit realized by the association will not be large.

Success of the Baldwin Airship.

IN the last number of THE AMERICAN EXPORTER brief mention was made of interesting trials of a new airship at the St. Louis Exposition. Subsequent tests of the same machine have been so striking and have aroused so much interest in the prize of $100,000 offered by the management of the Exposition for an airship that will meet certain prescribed conditions, that a more detailed description of the invention is necessary.

This airship, which was designed by Capt. T. C. Baldwin, of California, is in the shape of a fat cigar, and is 52 feet in length and 17 feet in diameter at the center. It contains 8,000 cubic feet of gas. To a silk gasbag is attached the frame, constructed of steel and aluminum. The frame is about 40 feet in length. Attached to the forward end of the frame is the propeller, like the screw wheel of a steamer. The motive power for this propeller is furnished by a small gasoline motor situated toward the forward end of the frame. It weighs only 66 pounds. The navigator's seat is further back toward the middle, and owing to the size of the craft the navigator cannot move so as to reach the engine to put it in repair.

The most striking test of the ship was made on October 31st, the only person on board being the navigator. As the propeller began to revolve the ship lifted herself slowly upward, and in two minutes was sailing majestically over the Exposition grounds. At an altitude of 2,000 feet the navigator caused it to circle around, then make the figure 8, the letter S, and then to start off on a tangent, and after numerous cavortings to return to the concourse and land within 100 feet of where it started, settling as gently as a bird.

The car of this airship is 40 feet in length and has a light framework of white cedar braced with piano wire. It is, in section, a perfect equilateral triangle, so that the whole is in the shape of a right prism, save that it grows smaller and smaller toward the ends. It is pulled through the air by a two-bladed silk propeller, 11 feet from tip to tip, set in an angle of 20 degrees at the front of the car. The draft of air caused by its 200 revolutions a minute serves to prevent explosions by constantly cooling the gasoline engine set about eight feet from the forward end of the car. The engine weighs only 66 pounds, but performs 2,500 revolutions a minute, and has a working capacity of 7 horse-power. The total weight of the whole apparatus is only about 220 pounds. The speed thus far attained, by means of its own engine, not taking the wind into account, is ten miles per hour.

American Railroads in a Trust?

IF an article published in the Chicago *Tribune* of November 13th is well grounded, the great railway corporations of the United States are about to unite in what will be the greatest of all trusts. The article says in part: "Details are being worked out rapidly for the formation of a gigantic railroad trust, beside which all the other great trusts before organized in this country will dwindle into insignificance. A dozen Eastern financiers, headed by the Standard Oil interests, with their unlimited wealth, expect to control the entire railroad system in the country and prevent competition among the various roads. The plan is to divide the railroads of the country into a few groups or systems, each one of which is to own a substantial interest in the stocks and securities of every other big group or system, and all to have representation on each other's board of directors.

"The dozen financiers all represented on the boards of the various roads will control from present appearances over 160,000 miles of railroads, including every important trunk line in the country, representing a capitalization of about $8,000,000,000 in stocks and bonds.

"They will see to it that the roads are managed as economically as possible and the rates kept up to as high a figure as the traffic will bear in order to secure all the revenue necessary to pay good dividends on the enormous capitalization.

"The recouping of systems, which has been going on for some time, has not yet been completed, but from present indications the Western roads will be divided into about six systems, the Eastern into three or four, with the Southern and New England lines forming a separate system each.

"Nearly all the changes thus far made in the regrouping of the Western and Eastern railroad systems suggest Standard Oil control of railroads to an extent that no other single interest has ever thought of undertaking before. Changes in the directors of the various trunk railroads are being watched with great interest because it is believed they foreshadow the complete ascendency of the Standard Oil interests in most of the important railroad systems of the country and the elimination, to a great extent, of the power heretofore wielded by J. Pierpont Morgan. Within the last two or three years the Rockefeller interests have obtained a foothold in the New York Central, New Haven and Hartford, Chicago and Northwestern and Union Pacific.

"The Rockefellers disclaim any intention of controlling the railroads of this country. They assert it is their desire merely to have a voice in the management of the roads and thus prevent any undue preferences being given to their competitors in the oil business."

American Copper Conditions.

EXPORT demands for American copper are so enormous that a word should be said as to market conditions for this metal in the United States. The change from steam to electric power throughout the United States, the increasing use of electricity for purposes of communication, lighting, heating, cooking, elevator service and scores of other adaptations of the new power have brought about an enormous demand for copper.

Coincident with this increased consumption in the United States, there is an export demand for the metal which is largely suggestive. It appears, for example, that the United States exports of copper for the first ten months of the current year amounted to 202,503 tons, which is far above the total export movement of any year in the past. The demand comes chiefly from Germany and France and is stimulated to no small degree by the Russo-Japanese war, France and Germany manufacturing large quantities of war supplies for the belligerent nations. The English demand has not been much of a factor up to this time in the copper situation. There has been a decided increase, however, in the shipments to China and Japan, although previously the latter country has usually produced enough copper for its own consumption.

Wins the Grand Prize.—The Victor Talking Machine Company, of Philadelphia, Pa., U. S. A., has been awarded the "grand prize" for talking-machines at the St. Louis Exposition.

Building Railroads with Machinery.

THERE is no branch of American enterprise in which labor-saving appliances are more effectively used than in railway construction in the great States of the West. In that part of the country the old-fashioned methods still in use in the Eastern States have been done away with entirely and the whole work of construction is done by machinery. The contractor divides his workmen into two gangs, one for the roadbed, the other for the right of way. The roadbed men usually begin the work. Scrapers, drawn by mules, hitched in strings of from four to a dozen, turn up the surface, their sharp steel edges literally planing off the ground to the proper grade. The most modern type has a trough or chute joined to the scraping blade at such an angle that the loose dirt is forced upward through the trough and poured from it into a wagon driven by the side of the scraper.

In a single day a scraper will level off half a mile of roadbed, so three or four of them will open up the way for a long distance ahead of the track-makers. But, perhaps, the engineers have run their lines over a hill or across a valley. Then the steam shovel—the heavy artillery of the construction army—goes into action. Its ponderous steel teeth tear their way through the rock as well as the earth, and every time it "bites" into the hill its scoop takes out as much material as two horses could haul. Beside the shovel stands a train of curious-looking cars. Each car is built of steel plates. The upper portion is shaped like the ordinary gondola car for carrying coal, but from the middle of the body it contracts until the plates form a sharp angle where they meet at the bottom. These plates move on hinges connected with a steel rod that extends the length of the car.

After the cars are loaded they are hauled to the valley or depression to be filled in. On the Union Pacific Railroad in Wyoming are "fills," as the track man calls them, which were once abysses 200 feet deep, and every cubic foot of the material was deposited in these chasms without being touched by the shovel or pick of the workman.

A workman goes to the end of the train and pulls a lever. You hear the familiar hiss of compressed air escaping. The lower plates of each car swing out on their hinges, and with a rattle and a roar the whole train-load of earth and gravel falls beneath the track. When the cars are empty another pull of the lever throws the plates back into their original position. If ten men had been put on each car to shovel it out, they would have required fully half an hour to accomplish what is done in a minute by one man operating the lever, and they would not have done it so thoroughly.

When the roadbed has been sufficiently surfaced, the rail-layers begin operations. Their apparatus is so simple that the amount of work it does seems incredible. Apparently, everything goes on wheels, except the few men adjusting the ties and those who are fastening the rails to them. A train of perhaps a dozen flat cars and a caboose is being pushed by a locomotive. From the front car extend two wooden timbers which overhang the roadbed for a distance of about twenty feet. These timbers are held rigidly in place by a wire rope attached to the outer end of each and stretched back over the archway on the car, forming a miniature suspension bridge. Getting aboard the train, you see it supports a little elevated railroad, the rails being fastened along the top of each car and extending back to the piles of ties and rails stacked up on the rear of the train. Besides this railway the train contains what might be called a "rollway"—a series of rollers set in the center of the elevated track, but below the tops of the rails.

Here are three transportation systems—the one on the ground, the railway for carrying ties and the rollway for moving rails. How they work can best be explained by watching their operations. At the rear end a car of ties is being loaded. Off it goes to the front end of the train, and out upon the suspension bridge. It is prevented from falling over the edge by blocks bolted to each of the beams; but when its front wheels strike the blocks only the car itself stops.

The platform containing the load of ties rests upon rollers; it continues in motion, and is tilted over to such an angle by the weight of the ties that they slide from it to the roadbed. The rear part of the platform, however, is caught on an iron clamp projecting from the top of its conveying car, which prevents it from following the ties. These fall across the roadbed at a right angle to the rails, and enough are dumped at a time to support 60 feet of track.

While the tie-car is making its trip the "bolters" have fastened four rails into pairs, connecting each pair by bolts run through the "fishplates" clamped against their ends. They are then placed on the rollway and started for their destination. Reaching the end of the suspension bridge, they are run on to another roller set in a wooden frame that holds it about two feet from the roadbed. This "dolly" allows the rails to be carried nearly their length ahead of the end of the bridge. In short, its principal use is to "let them down easy" on the ties which have already been arranged for them. As soon as they touch the ties the men do not wait to drive in the front spikes, but fasten what is termed a "bridle rod" to the front ends, while the rear ends are being bolted to the track already in place. This rod holds the rails so firmly that the train is at once pushed ahead over the newly laid track, which is completely spiked to the ties while the material for the next section is being hauled over the "elevated ways." Thus the train can be moved forward 60 feet at a time.

Looking back along the line, says D. A. Willey in the *Booklovers Magazine*, to whom we are indebted for much of the information here presented, one sees a mile or two away another train loaded with stone crushed to a uniform size, or perhaps gravel from a nearby pit. The cars are of the same shape as those which are filled by the big steam shovel. Nearer and nearer comes the train, but so slowly that only an occasional puff from the pushing engine is heard. Then, with a rattle which drowns all other noises, the stone begins falling between rails and ties. But the cars continue in motion until all are emptied, when the engineer reverses his lever and starts back after another load. Glancing along the track where the ballast has been dumped, you are surprised to find that it has been deposited so evenly that it is not only level with the tops of the ties, but extends a foot or so outside of each rail. Just a little work here and there by the shovel gang puts the finishing touch the track, so that the express train can rush over at sixty miles an hour without the danger of a rail spreading or a tie moving.

A tracklaying machine has laid 1,180 thirty-foot rails in ten hours. This means the laying of no less than 1,770 feet of track every hour, or nearly one-third of a mile. Yet, to accomplish the feat, all the rails not only laid upon them, but fastened to the wood and made ready for service. When one man can throw a thousand tons of ballast at once on the roadbed it will be seen that this part of the work takes but little time, and where a railway is to be built in a hurry the ballasters follow so closely behind the tracklayers that they are apt to be in sight of the construction outfit much of the time.

The marvel of it all is the amount of manual labor that is saved by the genius of the inventor. First come the scrapers, doing all the work of the hand shovel, yet two men only are needed for each machine—one to guide the horses and the other to adjust the blade and chute. With the steam shovel are an engineer and his assistants, for the shovel fills and empties its scoop into the cars without the touch of a hand. Compressed air unloads the cars, but the dirt train usually has half a dozen men aboard for emergencies, besides the engineer and fireman. On the tracklaying train two men load all the ties on the tie-car and one man moves it to and fro. For bolting the rails and handling them on the rollway six men are enough. About twice as many arrange the ties on the roadbed and fasten the rails. Add the locomotive crew and you have the actual working force. In putting the finishing touches to the track perhaps twenty men may be needed after the ballast train has passed over it.

Markets Lost Through Fall River Strike.

THE action of the American Federation of United Labor, in session at San Francisco, in voting an assessment of one cent a week upon each member for the benefit of the Fall River strikers, cannot fail to impress the intelligent observer of men and affairs all over the world. This assessment means that some $25,000 or more will be given the operatives each week for the support of themselves and their families until some arrangement satisfactory both to the employers and employees in the Fall River cotton mills can be made.

Many contend that the enormous losses involved by the strike demonstrate the shortsightedness of the manufacturers' policy, from a business point of view. The loss in operatives' wages alone is some $3,000,000. To this must be added the losses sustained by the mill owners, the loss of confidence between employers and employees, the shrinkage of the savings of employees, the suffering and privation that have followed, and, over and above all these, the loss which is now forcing itself upon the attention of the manufacturers—that of their markets.

It would have been a better policy to run the mills on short time and at a temporary loss than run the risk of losing their markets. It will certainly require the most strenuous exertion of cotton mill managers to regain their trade in both foreign and domestic markets which has been diverted to other channels during the past four months.

A Thirty-Foot Photograph.

JULIEN BRIED, a Californian photographer, has succeeded in taking the largest single photograph ever made. It is 30 feet long and shows the Golden Gate City, San Francisco, Cal., from a church spire eight miles distant from the point of taking. Six different photographic and mechanical inventions were required to make this enormous print. Briefly described, they consisted of a perfect filed instrument for taking the original negative; a rotary automatic process of enlarging; a machine for carrying out the process, and three machines for handling, developing, washing and mounting the prints.

In developing the print forty-five gallons of developer, one barrel of hypo, and other chemicals were used in a tray that took five men to rock it. The first print cost more than $200 to make, and was so clear that all the houses for miles were presented in detail, and even a church on a hill eight miles away was plainly visible.

Imitation of Oriental Silks.

COTTON fabrics made in imitation of Oriental silks have found favor with buyers, and there has been a phenomenally large sale of novelty cotton dress goods brought out to imitate linens. Cotton veilings, too, especially in novelty effects, have shown an activity far beyond the expectations of converters who brought out comprehensive lines on the veiling order.

While interest in novelty cotton dress goods has been general, the large bulk of the business so far this season has been transacted upon materials to retail at from 25 to 50 cents, with gradually lessening interests as the price scale ascends.—*Dry Goods Economist.*

Twenty-Thousand Ton Battleships.

FROM current reports it appears that plans are in course of preparation in the United States Navy Department for new battleships which will surpass, in some respects, any fighting machine now building or afloat, says a writer in *Cassier's Magazine.* The ships proposed are of 18,000 to 20,000 tons displacement, with an armament consisting of guns of but two calibers—ten 12-inch placed in turrets and in broadside, and, as a secondary battery, at least twenty of the new 3-inch quick-firing type.

It is claimed that such a battery of heavy guns would constitute the most formidable armament for long-range fighting that is practicable under present conditions, while the flood of fire from so many, and, in this respect, such effective guns as the 3-inch now is, would give the best possible defence against attack by torpedo-boats or destroyers, since this gun can now be fired as rapidly as those of less caliber, and is, of course, of greater range and destructive power.

The advantage of restricting the armament to guns of but two calibers needs no supporting argument, in so far as simplicity of hull design and facility of operation are concerned, and the calibers proposed seem those which the highest expert opinion favors at this time. The main objection to the design is, as reported, that in order to construct a ship of sufficient size to carry so large a weight of armor, armament and ammunition, sacrifices must be made in other directions, notably so in engine power and speed.

The latter, it is stated, may be limited to 16 knots, the argument advanced being that such a ship is built "to fight and not run away." The time-worn answer to this is that she must catch her enemy before it will be possible for her to fight. The fortress at Port Arthur is also built "to fight and not run away," but Admiral Togo's fleet seem to have no difficulty in escaping its fire.

The proposed design is not a new project with the officials of the United States Navy Department. It is, in effect, a growth of years. The fact that ships of this large tonnage are not already afloat in the United States fleet is due less to expert objection than to the difficulty of securing Congressional consent and the necessary appropriations. It took years to force American battleship displacement from 10,000 to 16,500 tons, and the proposed increase will probably meet the same opposition.

There is no doubt that, with proper design, more fight can be gotten out of 20,000 tons than from 16,000, although, both in America and in Great Britain, a not inconsiderable weight of opinion favors two 10,000-ton ships in place of one of the total tonnage. All sorts of arguments of the "too many eggs in one basket" type, the division and greater mobility of gun power, and others, are advanced as to this; but when naval designers have faced the problem in practice they have found that to fill all requirements as to armor, armament, speed, coal endurance, ammunition, stores and room to billet her crew the larger the ship the more readily the best features of an ideal design could be embodied.

In the attempt to keep tonnage down first the engine power and next the coal endurance have suffered, with the result that some battleships strike an undesirable mean, being able neither to fight nor "run away" effectively. If, for example, the battleships of the Port Arthur fleet had possessed both high speed and strong offensive power, they might have long since, if well handled, have either escaped to Vladivostok or have made a worthy effort to wrest the command of the sea from Japan.

Chicago University to Teach Railroading.

THE University of Chicago announces a series of evening courses in railroad transportation with the object of providing special instruction for the large railroad community in and around Chicago and thus enable clerical and other staffs in the service to gain a wider comprehension of railroad working in general. Young men wishing to enter the service should find attendance upon the courses a material help and a recommendation in their favor. The announcement states that the movement has been heartily endorsed by prominent railroad officers, and the outline of courses prepared has been submitted to them and has met with their approval.

Two short introductory courses are offered first, in order to get the movement under way without delay, and also to see how it will be supported. These courses began on the 15th inst. and will continue over the third week in December. The results obtained will determine future action, and whether or not further efforts will be justified. The university signifies its willingness to undertake, subject to the approval of railroad authorities, a scheme of instruction including courses of from three months to four years duration.

The work will be primarily in charge of Prof. E. R. Dewsnup, an English economist of considerable experience in conducting similar courses in England.—*Railroad Gazette.*

Building the Pole Finder.—Advices from Bangor, Me., state that Lieutenant Peary's new ship, which, it is hoped, will carry his next party to the North Pole, is now in process of construction. The work is being carried on under a great shed, lighted by electricity, and will be continued throughout the winter. Part of the material to be used in the construction of this remarkable vessel is live oak, purchased from the United States Government. This timber was purchased by the Government forty-five years ago, and ever since that time it has lain under water in the Portsmouth (N. H.) navy yard, but is today as sound and tough as ever. Very little live oak is used now in shipbuilding on account of the difficulty in working it, ordinary tools making but little impression upon it.

Improvement in Wireless Telegraphy.

AN American inventor who, singularly enough, is a nephew of the projector of the first Atlantic cable, has devised an appliance which, it is claimed, will make the wireless telegraphy capable of handling commercial business of large scope as readily as business is now handled over the old system of wires. This invention is an apparatus which takes up the slightest waves of electric currents and records messages on paper tape by the Morse code. Furthermore, it is declared to be practicable, and is to be used on steamships, in lighthouses, at wireless stations, on the coast or inland as soon as suitable stations have been provided.

It is an instrument which increases the range of the wireless field and completely changes the present methods of receiving messages by the wireless systems. The inventor calls his device an amplifier. It is a machine of wire coils and magnets so adjusted as to record all variations in the electric current which passes through it. One of the most novel features is the use of threads of glass one-one-thousandth of an inch in diameter to truss and connect some of the smaller parts. The current is turned into the amplifier and the message is clinked out in printed Morse characters on the tape.

The amplifier is said to be nothing but a mechanical microscope for electricity. The same amplifier applied to ocean cables will, it is further declared, more than double the present speed of transmission and will allow the connection of cables and wireless or land lines direct, so that a message may be sent around the world by one operator without its being repeated from station to station. The inventor declares that all the attachments now in use for wire telephone and telegraph lines may be made by the amplifier available for any wireless or ocean cable system. By means of it a land line may be joined directly to a wireless one, and by this means a message might be sent through either waves from London across the ocean to New York and there turned into a wire and carried without interruption to San Francisco.

Demand for American Motor Boats.

THAT the American motor boat, whether designed for business or pleasure, has "come to stay," is shown by the increasing demand for vessels of that type in every part of the world. These boats develop their power from gasoline, kerosene, alcohol or electricity, and are made in great variety of form and size, from the small yacht tender and dory to the ocean-going yacht of 1½ to 110 horse-power. The class of the engine is of either two or four cycle and of single cylinder or more. If the taste of the individual should be a boat of small power to use during the summer vacation the two-cycle engine from 3 to 10 horse-power can be used to good advantage in a boat of 21 to 31 feet in length. These are even desirable for freight and working boats.

When a preference is made for larger boats of 36 and 41 feet, even with a double-cylinder two-cycle engine or with a four-cycle engine of the same power, there is not any material difference. When it comes to power above 15 horse-power two-cycle, it is preferable to use the four-cycle engine on account of economy and the minimum vibration. The vibration is reduced by increased number of cylinders in which the power is created and transmitted.

If a speed boat should be particularly required, the racing lines would be evolved in the construction, and the four-cycle two or four cylinder engine would be installed in it and a speed of twenty-two miles or more per hour could be obtained from its use. Notwithstanding the attainments of the foreign manufacturers of fast motor boats, the American manufacturer is coming to the front and surpassing them. The foreign trade of the United States is giving a new impetus to the shipment of motor boats, as well as automobiles, to all parts of the world. We are informed of one factory that has its launches and speed boats in Panama, Cuba, Brazil, Argentine Republic and in all countries of Europe, including France and Switzerland, where the best auto boats are to be found; in South Africa, Fiji Islands, Australia, Tasmania and in China, Japan and the Philippines.

Several of the leading American types of auto boats are almost as well known in Europe as in the United States, and have everywhere received the highest praise not only from their users, but from mechanical experts and constructors. The designs, as well as the workmanship, finish and economic advantages of these vessels, commend them to every buyer and represent one of the most striking achievements of American skill and enterprise.

Progress Made in Irrigation.

RESIDENTS of the Central and Eastern States in the United States have little conception of the importance of the irrigation movement in the Far West. Were it not for the canals that have already been established millions of acres of land which are now producing alfalfa, grain and fruit in abundance would be barren wastes.

At the annual meeting of the National Irrigation Congress at El Paso, Texas, held last month, President Clark stated that the work of irrigation is being prosecuted in thirteen States and three territories. The cost to the Government will be paid by the settlers in the price of the land in the course of time, but no returns can be expected for some years to come, and under the ten-year installment plan the reimbursement will be very slow, though after ten years the returns will be very large.

The total amount of land available for irrigation is estimated at from 50,000,000 to 60,000,000 acres, which, when made productive, will support a population of from 20,000,000 to 25,000,000 people.

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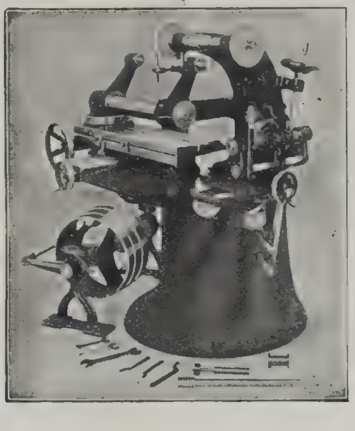

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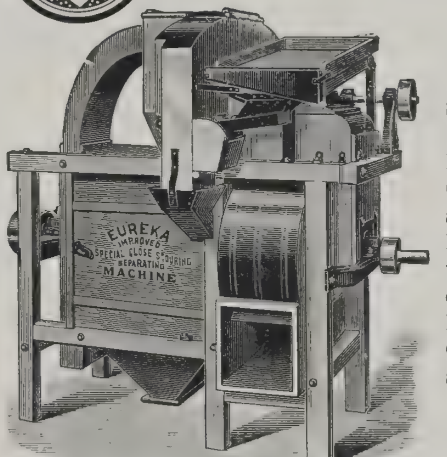

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Steel Highway Solves Good Roads Problem.

THE importance of good roads has never been more keenly felt by the public than at present, for the reason that at no time in the world's history have the public highways been used so extensively. The introduction of the bicycle and the automobile has been the means of inducing people to travel who formerly remained at home. The popularity attained by each of these vehicles of locomotion has been remarkable.

When the automobile was first invented it seemed scarcely probable that the machine would ever find a ready market because of its cost, and yet that objection, experience soon showed, was the least of the difficulties encountered by the manufacturers' sales of machines that sell for as high as $20,000 and even more are of daily occurrence. Naturally, the cheaper machines have had the greater vogue and thousands of them are in daily use, not only in the United States, but in nearly every other country as well.

As soon as the automobile owners began to journey about they found that while they occasionally found the highways in excellent condition more frequently they did not. As they were taxpayers and belonged to the wealthier portion of the community their complaints attracted the attention of town and city officials and an agitation for better roads was inaugurated.

While the automobilists ride only for pleasure the farmers are the ones who use the highways most, and who, therefore, ought to be, and are, more vitally interested in their efficiency and safety. A writer in *Gas Power,* in discussing the subject, says:

"People little dream of the tremendous annual loss to both farmer and consumer which poor roads entail, nor do they begin to appreciate to what an extent our roads are capable of improvement at not too extravagant a cost.

"As a general thing among the most important items of cost to the farmer is the time consumed in taking his product to the nearest railway. With poor roads his load is necessarily small and his trips numerous, thus taking time in haulage that would give greater results if devoted to the farm work proper. Then, too, on the great majority of our farms the difficulties of road transportation entail wastes of products which might be, but are not now marketed because because the margin of profit is so small that it would not pay to haul and ship; consequently, there are on the whole immense quantities of wood, hay, vegetables, fruit, etc., left to rot each year that would become salable and pay for handling at a reasonable profit could they be hauled cheaply enough.

"With the advent of motor trucks even more of the losses now common will be saved, and when the country does finally wake up to a conscious need of good roads those actually built will probably be as far superior to the present European roads as these now are to the average American ones.

"The most efficient form of road known to-day is the steel highway, which consists of modern beams laid parallel and in the ground sufficiently far apart to accommodate the wheels of vehicles, to the top surface of which is fastened long thin strips of steel plates from 12 to 14 inches in width, thus affording a smooth, even track for the easy movement of wagons. The traction thus afforded is uniform and the amount of horse-power necessary to move a load is greatly reduced. No matter what the condition of the road between the running surfaces may be, the wheels resting upon a hard and even foundation move along easily and noiselessly.

"We cannot look over the field of agriculture and its allied problems of road transportation without seeing how much more than is now accomplished might be accomplished with the general introduction of the motor as a substitute for the horse both for drawing the plow and moving loads on the highway. And when the proofs of practical economy are so overwhelming in the final result of product and in dollars and cents of profit the farmer who shuts his eyes and denies the probability of their general coming deludes only himself.

"The prediction of the nigh displacement of the horse for nearly all farmwork is not a visionary dream, but one of those things which the course of events points to as a certainty of the future and is based upon the simplest of reasons. The fact is it is cheaper to farm by power to-day, and it will continue to be cheaper even with very great rises in the value of fuel.

"With the advent of the motor-driven wagon and its capacity for handling enormous loads cheaply and quickly will doubtless come the general introduction of the steel highway on all public roads, for this form of road not only solves the great problem of cheap road haulage by animal power, but it at the same time overcomes the greatest of all objections to the use of the motor truck as well. The present drawback to the use of these vehicles is the high cost and short wear of the rubber tires now necessary on machines used on ordinary stone pavement, macadam, or dirt roads. Such tires are a practical necessity, for the machinery of a motor wagon will not last long under the stresses produced by the vibration and jolting of the vehicle over the small stones and unevenness of even good roads unless these vibrations be absorbed by some equivalent of the rubber tire, an equipment that has not yet been found in any combination of springs.

"The steel highway solves this problem by doing away with the source of trouble—unevenness and vibration—so that the metal-tired wheel is found to do as well and even better on the steel girders than the rubber does on the best of roads. Consequently, with such roads the life and mileage of the motor wagons may well be expected to equal, if not even exceed, the mileage life of steam locomotives on the regular railways.

"The probabilities are that the increased production and the saving in waste and labor which they would bring about would pay for their entire first cost and the cost of maintenance each."

Possibilities of the Coalless Locomotive.

ONE of the great transcontinental railway companies of the United States has under construction a locomotive which the designers contend will revolutionize railway transportation. This new locomotive is described as a power-house on wheels. It is smokeless and waterless. It needs no coal, it drops no ashes and it throws no sparks or cinders. Its builders say it would be able, provided a clear track could be obtained, to haul a 2,000-ton train from New York to San Francisco without a single stop. There would be no need of delays for fuel or water, for the locomotive can carry enough fuel for the journey of 8,000 miles, and it needs no water for steam. Theoretically, all this has been figured out to a mathematical certainty. The locomotive uses a combination of compressed air power, fuel oil power and electrical power.

There is said to be no limit within reason for the speed the locomotive might attain, provided the roadbed and other conditions permitted. An average speed of 100 miles an hour could be maintained from the Atlantic to the Pacific if it were possible to get the right of way. Such speed could be attained by other electric traction vehicles, it is pointed out, were it not for the difficulty of getting power at all times.

Aside from the question of speed, the builders of the new locomotive believe it will bring about important economics in the operation of railroads. The steam locomotive has to carry its fuel and water with it. This means 5 tons of coal and 7,000 gallons of water. In addition there is the weight of the tender. It is an axiom in traction engineering that "it takes a pound of weight to carry a pound of weight." Of all the coal burned by a steam locomotive 96 per cent. of the energy produced passes up the smokestack and 4 per cent. "gets on to the boilers." When it comes down to the final test only 2½ per cent. finds its way to the driving wheels. To overcome this waste has been one of the greatest problems engineers have been studying for years.

The only fuel required for the new locomotive is crude petroleum, costing from 3 to 5 cents a gallon. This fuel is used to develop electricity and compressed air, which are applied successfully and economically, the builders say, to the entire work of locomotion.

Highest Development of the Telephone.

MEMBERS of the Franklin Institute of Philadelphia, the oldest scientific body in America, witnessed on the evening of November 11th a successful test of a telephone which makes records of messages, so that they can be transmitted again after the sender has gone away. As explained by the introducer of this new appliance, the machine can do these things: First, it receives dictations; second, reproduces to the dictator; third, reproduces to one at a distant point, the machine being under control at that point; fourth, it records conversations between two persons over the commercial telephone lines without in any way interfering with the operation of those lines, and fifth, it records automatically, in the absence of the subscriber from the office, messages coming over the line in such absence, the machine being under the absolute automatic control from the ordinary performing function of the telephone line, the ringing of the bell starting the machine, the machine sending a signal over the line to the party talking, notifying him that the machine is running, the machine running a fixed length of time, sending another signal, then automatically stopping. It can be used by a typewriter taking dictation. This application of the telegraphone dispenses with the services of a stenographer, and also leaves the principal free to dictate his letters at such intervals as may be most convenient to himself. It also provides absolute privacy to him, a fact not to be ignored, for a communication may be of such nature that the presence of another person is sufficient to divert the mind.

International Airship Race.

AS one outcome of the airship exhibitions and contests at St. Louis it has been practically decided to inaugurate a regular international contest, to duplicate in the air what the America's Cup has done for every-day water-sailing. The idea is said to have originated with Edward J. Carpenter, of San Francisco, owner of the airship Arrow. Mr. Carpenter suggests that a trophy, such as is offered in the international yacht races, be put up and rules somewhat similar to govern the contest to be formulated.

In order to make a commencement Mr. Carpenter's plan is to send a challenge for a series of races, to be held at any time and place satisfactory to Santos-Dumont, the present acknowledged (even if unofficial) world's champion. Each man is to send his requirements to the other for inspection and then to have an international jury of aeronauts selected to pass upon and arrange the conditions, rules and requirements governing the contest.

Largest Pumping Plant in the World.

IN order to dispose of the drainage of a great section of Chicago, Ill., that city is erecting the largest pumping plant in the world on the lake shore. When the drainage scheme on the north side of the city is in operation no single drop of city sewage will be able to find its way into Lake Michigan from Evanston to the Calumet River. It will all flow into the backward-running Chicago River and thence into the drainage canal. The flow of lake water into the river will dilute this drainage so that, at last, Chicago will have a complete and entirely sanitary system, guaranteed to affect neither the health of the city itself nor that of any city on the route followed by the waters of the Chicago River as it journeys to the Gulf of Mexico.

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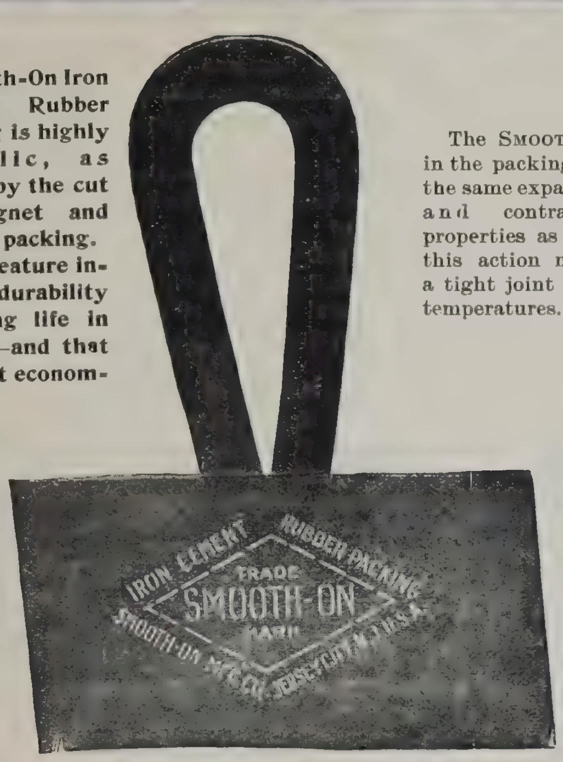

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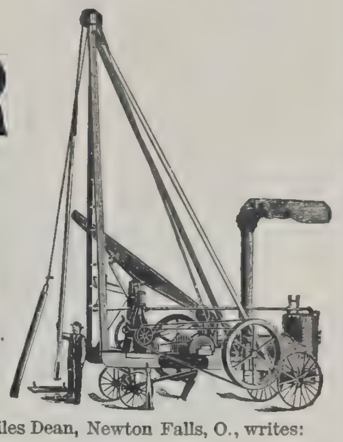

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L. F. Keith, of Maryville, N. Y., says: "My three Star Machines have been giving perfect satisfaction. I have drilled 60 feet in rock in one day of 10 hours."

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These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

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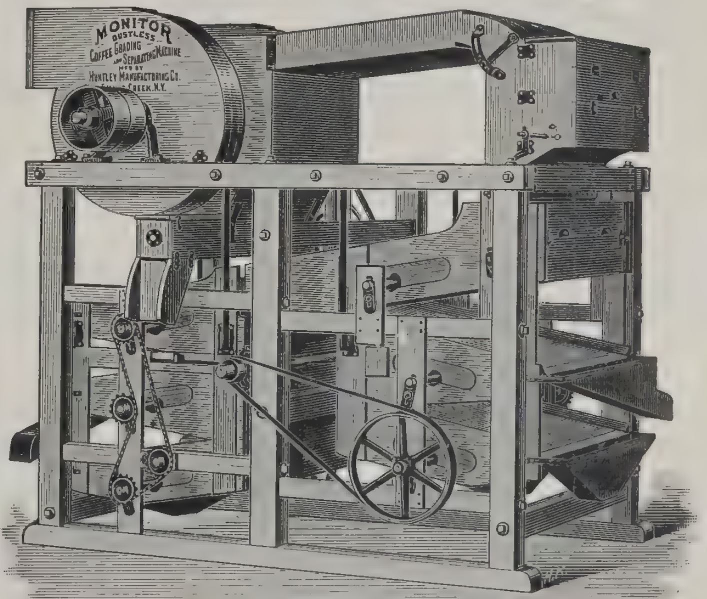

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Machines That Seem to Have Brains.

A WRITER in a recent issue of the Washington *Star* relates some interesting observations regarding the progress made by American ingenuity.

"From the corn-miller's little bell that sets up a fussy tinkling the moment the hopper runs empty, up to the calculating machines that are now to be found in banks and insurance offices, clearing-houses and observatories, there are so many mechanical substitutes for brain-workers that it is difficult at times to realize that it is, after all, only mechanism and not intelligence that is being evolved," said an employee at the Patent-Office to the writer. "Some of the touches of what, for convenience, we may call mechanical intelligence to be met with in various odd corners of the industrial and commercial world are really quite amusing, and they have their prototype in that little bell of the old windmill.

"There is, for instance, to be seen in any screw factory a different application of that device. The machinery takes hold of a rod of metal, pulls it rapidly along, gives the end of it the general shape of a screw, cuts the thread round it and the slot in the head, and then ships off a perfect screw. If you watch the thing actually making the screws the idea strikes you that it is really a piece of mechanism; but when the machine comes to the end of its material and gives a sharp, impatient ring of the bell for the attendant to bring more you cannot help laughing, and you would scarcely be surprised if, when the man came with another rod, the busy screwmaker gave him a sharp reprimand for inattention and dilatoriness. In these days of phonographs, of course, it would be quite practical to make it do so.

"The machine by which railroad tickets are printed gives another amusing little show of intelligence or what looks to be very like it. Railway tickets are not, as might be supposed, printed in large sheets and afterward cut up. The cardboard is cut into tickets first and they are printed one by one afterward. The little blank cards are put in a pile in a kind of perpendicular spout and the machine slips a bit of metal underneath the bottom of the spout and pushes out the lowest ticket in the pile to be printed and consecutively numbered. It is of no use to print a bad ticket. The machine finds out an imperfect blank in an instant, and flatly refuses to have anything to do with it.

"These are simple instances of a good imitation of watchfulness and discrimination; indeed, the latter looks almost like conscientious care. They afford a droll suggestion of the trained intelligence of the learned pig or the performing dog; and we find many various degrees of the same. At the United States mint they have weighing machines for coins to which it is difficult to deny a very acute intelligence. The mint apparatus is the more remarkable of the two.

"The new coins at the mint, however, are sometimes a trifle over weight, while sometimes, of course, they are under, so it is necessary to sort them out in three categories—light, heavy and good. This delicate business is done with unerring precision by a long row of wonderfully clever machines. Into these machines single piles of shining new coins are put, and quite automatically the mechanism takes each coin, puts in into the scale and in a fraction over two seconds—at the rate of twenty-five a minute—weighs it. If the coin is light the machine shoots it into its proper receptacle; if heavy, into another, and if it is of correct weight, or with a margin, as they call it, it is pushed into a third receptacle."

A New Cigar-Vending Machine.

THE Commissioner of Internal Revenue has had submitted to him a new style of vending machine. Accompanying the machine is a large circular-shaped pasteboard box having fifty separate pockets or receptacles for holding the cigars. The box is set in motion by the insertion of a nickel in the slot, and rotates so as to deliver one of the cigars to the consumer through an opening in the side of the machine. The box containing the cigars is so arranged as to expose to view through the glass front the internal revenue stamp, the caution notice and the factory brand, showing the number of the factory, district and State and the number of cigars contained in the box, as required by the regulations, and which the manufacturers would be required to supply before such boxes can be legally used in the vending machine; that after a careful examination the machine and the box submitted with it have been approved, upon the condition that all requirements of the internal revenue laws and regulations as to stamping and branding, labeling, etc., shall be complied with, and that the machine shall be operated in such manner as to secure the Government against frauds of any kind upon its revenue.—*Tobacco.*

Two Interesting Contrivances.—Recent American inventions include two electrical contrivances for the household which are both novel and useful. One is a little electric heater which can be screwed on to any faucet and which will furnish a half-gallon of water per minute at 100 degrees temperature. It will give a faster stream at a lower temperature, or a slower stream at a higher temperature. All double piping and hot-water apparatus can be eliminated by the simple adjustment of one of these heaters, at sink, bathtub or washbowl. Then there is an arrangement known as the "suspended unit" heater, which is a nickel or silver plated tube, connected by wire with any lighting circuit, and which may be dropped into any liquid it is desired to heat. With it baby's food may be warmed in a few moments, eggs or coffee boiled in a few minutes or a bathtub of water warmed sufficiently in half an hour.

The Silent Salesmen.

ONE of the greatest strides in American retailing during the past few years has been in the direction of all-glass show-cases and display windows. The full significance of this movement can be appreciated, when it is stated that the former have come to be called "silent salesmen," thus giving a clue to their enlarged field of usefulness. The main idea in both show-cases and window displays of all-glass (meaning nearly all glass) is that the impediments to complete vision and optical examination of the contents have been reduced to a minimum, thus relieving the salespeople of much preliminary hauling down and spreading out of goods for the inspection of possible customers.

But perhaps the chief value of the improved show-case has been found to lie in its promotion of sales, as has been practically demonstrated in most sections of the United States.

It is an ancient truism that all our luxuries and most of our necessities are self-created. In other words, that we are all very much like children who have only to see a thing to want it. The all-glass show-cases and display windows provide improved opportunities for the attractive exhibition of goods. And there you are!

So far as construction is concerned, these all-glass store fixtures are now being made up in well-nigh bewildering variety. In addition to the various standard and special sizes they are frequently made to measure for certain stores. The basic principle in all of them, however, is to use the smallest possible amount of wood or metal in their construction. The common kind are put together by means of wooden strips. For the more costly variety polished or nickeled copper, bronze, black iron and aluminum are employed.

The most expensive are those in which the fastenings are merely metallic clips and angle pieces, held in place by ornamental rivets. These, of course, require drilled holes in the glass and the use of pieces of felt, rubber or other non-conductors, to prevent or reduce the constant fractural dangers of changing temperatures.

World's Largest Turbine.

WHAT is said to be the greatest turbine wheel in the world was recently completed by a constructing firm in the city of Philadelphia and shipped on specially designed cars to a power firm in Canada. This extraordinary turbine is of 10,500 horse-power, is 30 feet from base to top, is 22 feet wide over all and weighs 364,000 pounds. It was built in the remarkably short time of less than four months. The water which is consumed hourly by the big wheel would form a fair-sized river. The intake is 10 feet in diameter, and the water after going into it is discharged through two draft bends. The wheel proper makes 180 revolutions a minute, with a head of water acting on the turbine of 125 to 135 feet. The quantity of water going through the turbine when developing full power is 395,000 gallons a minute, or what is equal to a river 88 feet wide, 10 feet deep, with a constant flow of 60 feet per minute.

Electric Pumping at World's Fair.

THE exhibit of electric pumping at the World's Fair, St. Louis, was very elaborate. A most extensive display of types and methods was shown, covering every field of usefulness, from the smallest house pump, with every form of automatic electric regulation, to the massive centrifugal pumps in the pumping stations of the Cascades, the crowning feature of the Fair. Each of these large pumps had a capacity of 35,000 gallons of water per minute against a head of 159 feet, and the maximum capacity of the pumping station, which was one of the largest in the world, was 165,000,000 gallons of water per day, nearly three times the consumption of water in the whole city of St. Louis, and one-half as much as that of New York.

To Locate Sunken Ships.

AN ingenious device for marking the places where ships have sunk has been designed by a navigator living in the State of Wisconsin. It consists in part of a cylinder set into a hatchway on board the vessel, the cylinders being 2½ feet in diameter and extending down to within a foot of the keelson and are fastened to the decks. Each one will hold two miles of 3-inch manila rope. In each cylinder is a hollow buoy 6 feet long and a little over two feet in diameter, capable of sustaining 1,000 pounds in the water. To this buoy is attached one end of the cable or rope in the cylinder, and over the top of the whole contrivance is placed a loose hatch cover. When the ship sinks the rush of the water forces off the cover and the buoy floats to the surface, attached by the rope to the vessel. On the buoy is painted the name of the boat, and the rope or cable indicates the depth of the water.

Portable Grain Bins.—That necessity is the mother of invention is strikingly shown by the experiences of the last year in Oklahoma Territory, U. S. A. When the splendid wheat crop of 1903 in that territory was harvested the elevators and granaries were filled to overflowing, and scores of thousands of bushels of the grain were piled on the ground with no shelter whatever. But this year along comes an American inventor with cheap, portable grain bins, each affording shelter and storage for 2,000 bushels, which can be set up in a short time. The sides are galvanized iron, the floor heavy plank, and the top waterproof canvas.

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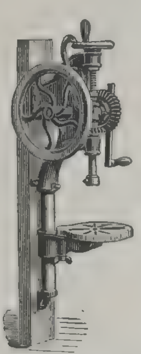
Fig, 742. No. 12.

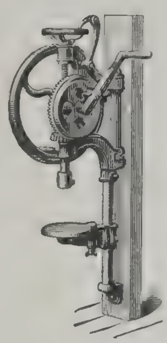
Fig. 731. No. 1.

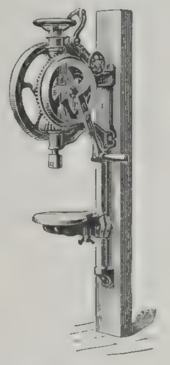
Fig. 732. No. 2.

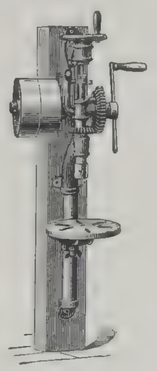
Fig. 746. No. 12

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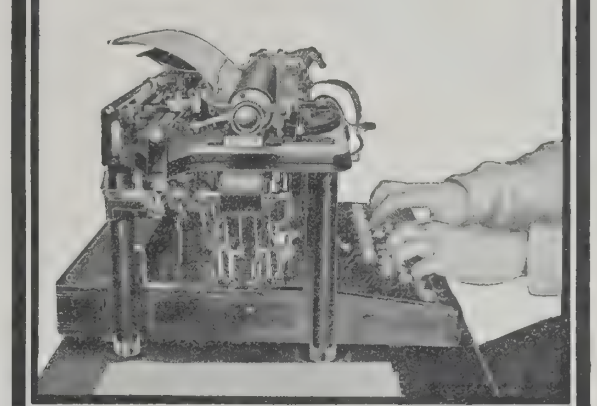

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Order through any buying and shipping agent in New York or elsewhere.

Passenger Elevators for Steamships.

PASSENGER elevators on ocean steamships are the latest novelty to be adopted by the progressive companies that cater to the best passenger traffic between the United States and Europe. The Hamburg-American Company, which is now building new greyhounds of the sea at the Vulcan Works, Stettin, and at the Harland & Wolff yards, Belfast, announces that both vessels, which will be ready for service early in 1906, will be equipped with those comfort-contributing machines.

The aim of the modern steamship builder is not to provide vessels in which everything else is sacrificed to speed, but rather to construct vessels that shall contain every appliance and device that can contribute to the comfort of the passengers.

The desire of the steamship companies to build slower ships is even greater than the desire of people to travel on them. Fast ships mean much coal. In one of the big greyhounds the engine space is so great that no room is allowed for cargo.

In the two new ships of the Hamburg-American line there will be eight decks, five of which will be occupied by first cabin passengers. This means that a passenger who is quartered on the fifth deck below the sky in order to reach the sun deck will have to mount a distance greater than the height of a five-story building.

The contract for supplying the elevators and the accompanying machinery has not yet been awarded, but rumor has it that as likely as not an American firm will get it. In Germany it has been noted that American designs of elevators are quite popular, and it may be that they will take their place on board the foreign ships with other American inventions. They will, however, be electric lifts, and will be controlled by dynamos, the power for which will originate at the same boilers which will generate steam to propel the vessels.

The shaft through which the cars will run will be located beside the grand stairway, amidships. The decks to be reached by the lift will be the upper deck, the promenade deck, the main deck and the lower deck.

On the boat deck the door to the shaft will open on to a rathskeller. On the deck below the promenade deck it will find the music-rooms very handy. The entrance on the upper deck will be in a corridor running both athwart ship and fore and aft and very convenient to the many staterooms on this deck. The main deck, the next below, will contain the grand dining saloon, adjoining which the shaft will run. On the lower deck, at which the shaft will end, the entrance will be from the grill-room.

In fact, the ship will be so arranged with reference to the elevator that one may pass from his stateroom to any other part of the ship much as he would from floor to floor in a hotel.

Remarkable Heating and Welding Compound.

THE genius of inventors and the patient skill of chemists are producing some wonderful results in all lines of human endeavor. At the World's Fair, in St. Louis, some of these results were shown in mechanical devices and in chemical compounds. One of the most remarkable of the latter is a heating and welding compound called thermit, the use of which was demonstrated in the Mining Gulch section of the fair. After a pinch of a special ignition powder has been placed upon some of it and lighted by a Bengal or storm match, a powerful chemical reaction takes place, within the space of half a minute, by which the temperature of the whole mass, no matter how large the quantity used, is raised to 5,400 degrees Fahrenheit, and a pure liquid steel is given off, the rest of the compound rising to the surface in the form of aluminum slag or "corundum" in the proportion of three parts to one.

The molten steel, amounting by weight to one-half the thermit powder, will melt at once the surface of any metal to which it is applied, although the latter is entirely cold, and unite with it into one solid mass.

In this way all sorts of repairing of machinery and other metal work can now be done readily by hand which has hitherto required the removal of the broken portion of its shipment to the foundry. An incalculable amount of time and trouble and money is saved by the device, which permits all repairing to be done on the spot almost instantaneously. It has already been extensively applied to such purposes as the closing of cracks in metallic plates or surfaces of any kind, the welding of trolley rails of steel or wrought-iron pipes and of broken roll-bosses.

In future naval wars it will be invaluable for promptly annealing the spots in armor plate that have been injured by the enemy's shots. It is applicable to girders, bars, angles, shafts, turnposts, locomotive frames and any possible section of rolled or wrought iron or steel, and it may even be used for welding cast iron and making castings.

A Powerful New Explosive.

HELLENITE is a new explosive invented by Professor Wiley, superintendent of Lloyd's fireworks factory, Staten Island, New York. According to the inventor, the explosive is the most destructive agent ever compounded, and yet is the safest to handle. It is suitable for torpedoes and mines, and is said to be 200 times more powerful than the explosives ordinarily used in those destructive weapons.

The great trouble with the firing of shells containing shrapnel is that the rate at which they are made to revolve is so great that the shell will explode when only about 1,800 yards from the point where it is fired. When the manufacturers of these shells have invented new methods to make the shell revolve faster or slower, so that the explosion will not occur until after it has traveled farther than ordinarily, there has always been some reason which makes the shell continue to explode at the distance of 1,800 yards, or, in the majority of cases, at a much shorter distance, and on several occasions immediately after leaving the mouth of the cannon. This, Professor Wiley says, he can remedy, and that the new shell he has invented can travel a distance of five miles before exploding.

This is the end which all ordnance officials have been hoping to have a shell attain, for if the enemy can be kept at that distance, the small arms of the infantry will prove of practically no use in attacking fortifications.

Great Railway Museum.

WHEN the World's Fair at St. Louis closed the Baltimore and Ohio Railroad transferred its wonderful railway exhibit to Philadelphia to form the nucleus of a great permanent railroad museum.

It is fitting that the Baltimore and Ohio should take this initiative looking to the eventful establishment of a world's institution wholly devoted to the railway and allied interests. It was the pioneer in American railway inception, and its own possessions are representative of the early days comprising an aggregation of inestimable worth.

At Chicago the space occupied approximated 30,000 square feet. At St. Louis it exceeded 60,000. Within the section are shown the inception, evolution and development of every essential known to modern practice. From Sir Isaac Newton's initial thought of steam propulsion on land in 1680, through 60-odd full-size examples to the 240-ton articulated locomotive of 1904, the chain may be studied in a series of object lessons nowhere else possible.

The feasibility of combining material and means, and applying all to the ends indicated, is greatly strengthened through the tender by Philadelphia of an existing structure most admirably adapted to meet the requirements. It offers a clear floor space approximating 120,000 square feet, with a general height of 30 feet. It is exceptionally well lighted from the sides and overhead, has track facilities and power connections. The location is central, being on the 16-acre site skirting the Schuylkill the city has set apart for the grouping of institutions of a commercial and mechanical character.

Petroleum Output for 1903.

IT is interesting to note that the report of F. H. Oliphant to the United States Geological Survey announces that our production of oil in 1903 was greater than in any previous year. The total production of crude petroleum in the United States in 1903 was 100,461,337 barrels, a gain of 11,694,421 barrels, or 13.17 per cent., over the production of 1902. The great increase was mainly due to the remarkable output in California, which is now larger than that of any other State. California produced 24.27 per cent., or nearly one-fourth of the entire production.

Next to California the largest gain in production was in Indiana, which was 1,705,515 barrels, an amount that represents a gain of 22.8 per cent. over the State's production in 1902. Kansas showed a remarkable gain in production—600,465 barrels, or 181 per cent.; Kentucky and Louisiana showed gains of about 369,000 barrels each; Indian Territory gained 101,811 barrels, or 274.4 per cent., and New York gained 43,248 barrels, or 3.86 per cent.

On the other hand, there was a slight decrease of production—128,086 barrels—in Texas and Ohio, Pennsylvania and West Virginia all showed decreased production, amounting to a total of 1,856,619 barrels. The largest decrease in production was in Pennsylvania, and amounted to 708,724 barrels.

Coaling Warships at Sea.

THE results of experiments with the transference of coal on seas not too rough seem to have placed the work on a practical basis. In the early days of experimentation it was thought that to coal successfully the colliers and warships must seek the quieter waters inshore, outside of the three-mile limit; but with the appliances and methods since invented vessels have been coaled far out at sea and in stiff winds if the water surface were not too tumultuous.

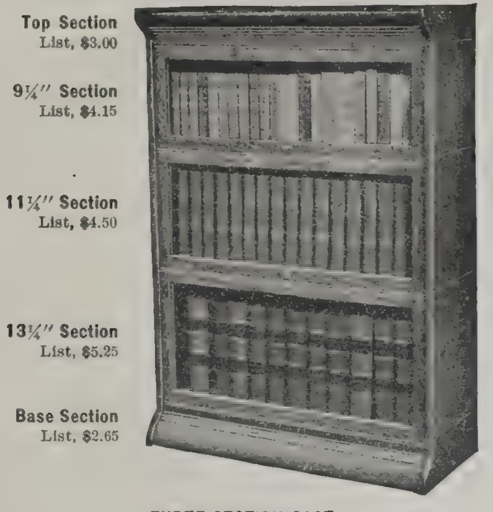
The method now used is to have the collier in tow of the steamer to be coaled. An overhead cable extends from the aftmast of the warship to the foremast of the collier, and on the cable is a traveler provided with hooks for carrying buckets of coal. The full buckets are sent over to the warship and returned empty. In this way from thirty-five to fifty tons of coal have been transferred to the bunkers of a warship in an hour while the vessel and trailing collier were steaming ahead at a rate of ten or eleven knots.

Fast Traveling by Rail.

SOME remarkably fast runs have recently been made by trains on American railroads. A westbound fast mail train on the Pennsylvania Railroad made a run of 132 miles in 132 minutes. This train usually consists of three mail cars, weighing about 160 tons. An equally good run was made on September 19th.

On Friday, November 11th, a special train was run over the Pennsylvania lines from Crestline, O., to Fort Wayne, Ind., 131.4 miles, in 113 minutes, equal to 69.8 miles an hour. The train consisted of Atlantic type engine No. 7,166, weighing, with tender, 163.5 tons, and three cars. From Crestline to Clarke Junction, 257.4 miles, the time was 245 minutes, making the rate of speed 63 miles an hour. Excluding stops it was 64.9 miles per hour.

Knock-Down Office and Home Furniture for Export.
The "GUNN" K. D. Sectional Bookcases.



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6¾ cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10½ inches deep and 32½ inches long. Made of selected quarter-sawed oak and handsome polish finish.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

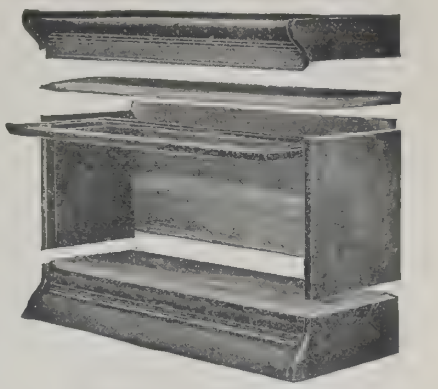
ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

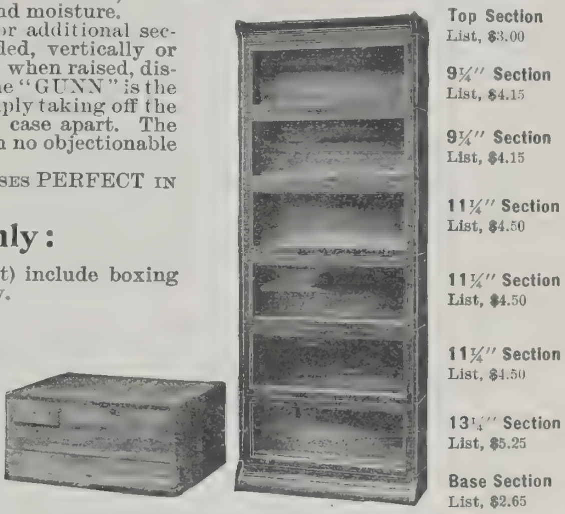
Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) **construction.** It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

THREE-SECTION CASE, as shown, complete - - each $10.76
SIX-SECTION CASE, as shown, complete - - each $17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

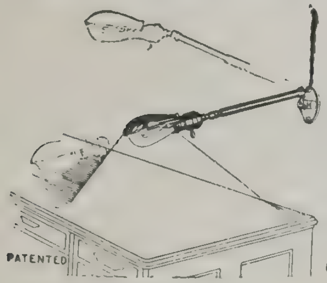
Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used. Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

ELECTRIC LIGHT FIXTURES



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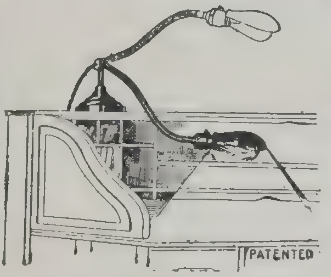

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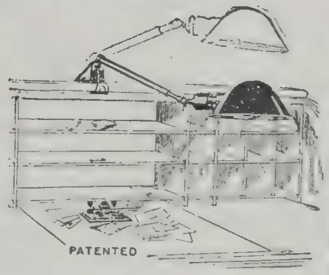

Style No. 30.

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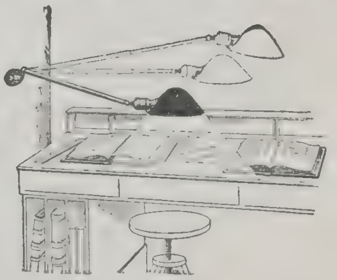

Style No. 290.

By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

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Also Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

Orders filled through commission houses. Correspondence solicited.

Electric Campaign Buttons.

AMONG the many unique novelties of the political campaign just closed the electric-lighted button probably excited the most interest. The button is of the size of the ordinary photographic campaign button, which it much resembles in appearance, and it is worn in just the same manner in a buttonhole in the lapel of the coat. But over the picture in the front of the electric campaign button is set a little convex glass containing a tiny electric light to illuminate it, this glass serving also to magnify the picture when the light is thrown upon it and also to reflect the light with the effect of a little bull's-eye.

To the back of the button is attached a slender electric cord, which at its other end is connected with a little flask-shaped holder containing a dry battery, which can be carried out of sight in any pocket.

By day, unlighted, the electric button looks just like a regulation campaign button, but by night, in the dark, it's different, and its effect then to one not knowing of it may be mildly startling.

"Jones," says Robinson, meeting at such a time his friend wearing a button which he can't make out, "I see you're wearing a button. Who's your candidate?"

And then Jones presses a button in his pocket, which is really a little electric switch on the battery, and turns on the electricity and flashes the picture in the button into view, while the button itself, with its convex glass, shines like a little headlight. And:

"That's my candidate," says Jones.

And Robinson staggers back in amazement and then forthwith hurries off to purchase a similar button for himself.

Meat Packed Like Candy.

ONE of the largest American packing-houses, whose meat products reach nearly every market in Christendom, has adopted a package for sliced dried beef, which is as dainty as that used for the finest confectionery. The box is made to contain five pounds, and is inlaid with lace-designed paper, and, before being filled, looks more like a Christmas candy-box than one for meat. When filled the viand looks enticing and dainty. It is an appetizing delicatessen, and appeals to the buyer. The box is easily opened, and the contents can be sold in any quantity down to small fractions of a pound.

It is filled at the factory in a unique way. The chunk of dried beef is placed in a novel machine, which looks like a covered wheel. The sharp rotary knife slices the beef evenly. It falls upon a clear, traveling canvas-covered belt, along which deft-handed young women sit and pick the choice, full slices and place them in the boxes.

The broken or imperfectly shaped pieces pass on to the end, where they are raked up and placed in a receptacle. In this they are taken to another set of selectors, who pick out the larger pieces for the smaller canned or jar packages. The tailings from these go to another place, where they are ground up and made into some other appetizing dish and packed for market.

When the young women along the belt line have their boxes filled each deposits a neat little round piece of paper therein. On this is printed the week and year it was packed, and also the number of the young woman packing the box; likewise the factory and city at which it was packed. The boxes are packed in layers, between which are placed clean sheets of white paper. The contents are enclosed just like so much candy intended for a dainty present and kept sweet and fresh for the store.

Observation Smoking Cars.

THE latest thing in luxurious railroading is the observation smoking-car. Twenty-one of these are now being built by the Pullman Company for some of the Western lines. These cars are 72 feet 6 inches long. At the rear there is a 6-foot long observation platform with railing and gates. Next is an observation room opening on to this platform, which is 23 feet 3 inches long, and contains sixteen chairs, a bookcase, writing-desk and table being at one end. Next follows a buffet, and beyond this, at the front of the car, is an exceedingly large smoking-room for gentlemen, this smoking-room being 37 feet 5 inches long, containing sixteen chairs, all placed on one side, the other side having three tables and a writing-desk.

The men's toilet opens into the smoking-room, containing also a wash-bowl. These cars will be arranged so that they can be used in electrically lighted trains. They are also equipped with Pintsch gas, and should prove to be very popular, as they are very unusual adjuncts of the overland service.

Minute Watchmaking Screws.

THE fourth jewel screw of almost any of the standard American makes of watches is so small that to the naked eye it looks like a mere speck of metal. It must necessarily be perfect in all respects. When examined under a powerful microscope it is seen that the threads averaged 260 to the inch. It is exactly four one-hundredths of an inch in diameter and over 50,000 could be packed into a lady's thimble with ease. Counting these screws is never attempted, of course, but 100 are weighed on a delicate steelyard and the total number of an output is arrived at by comparing the gross weight with the weight of these. Such tiny screws can only be made in large numbers by machinery, and the operation attending their manufacture is one of the most delicate things in watchmaking.

The Veneering Industry.

NEARLY all fine furniture and woodwork nowadays is veneered. This is especially the case in the widely popular oak wood. This is because a much finer finish can be got from quartered oak veneer than from the solid wood. The grain comes out better, and it takes a higher polish. Where strength and durability are required the solid wood is used, but for the surfaces veneering is preferable.

There are two kinds of veneering, sawed and sliced, but it takes an expert to tell the difference. The process of manufacture is simple and interesting. The logs delivered at the factory in the rough, about thirteen feet in length, are first cooked in hot water vats to make them soft and workable. It does not matter how green they are.

After being thoroughly "cooked" they are placed on machines designed for the purpose and either sliced by a powerful knife the length of the log or cut by a circular saw into slabs about one-twentieth of an inch thick. These slabs are the full length of the log, and when first cut are so pliable that they can be bent double without breaking. The uniform thickness or thinness of the slabs is preserved by the action of the machinery, and does not vary as much as a hair's breadth in the entire length of the slab. After the slabs are sliced or sawed they are seasoned by steaming. This requires only about twenty-four hours, and then they are ready for the market.

United States France's Rival in Silk Manufacture.

MORE raw silk is consumed in the United States than in any other country in the world, and in point of production of finished goods it occupies an equal position with France. At present there are upward of 550 active silk manufacturing establishments in the United States, having a capital of about $100,000,000 and giving employment to some 75,000 wage-earners. The value of the products of these mills last year was over $125,000,000, and 11,000,000 pounds of raw silk were consumed in their making. A greater quantity of raw silk was sold during the year in New York than was consumed in the whole of France, which is the largest raw silk-consuming country of Europe.

To provide features of novelty in designs and in character of manufacture every large silk plant in the United States has now a school of design, where scientific and technical education is taught, not only along American lines, but by means of association with artists and establishments abroad. Skilful chemists likewise are attached to these plants.

There are silks and silks. You can pay $100 a yard—if you have the money to spare—for the finest textures, and you can get silk goods for 10 cents a yard. In the latter case the fluffy product of the cotton plant plays a larger part than the filament of the silkworm. Wool, too, is much used nowadays in conjunction with silks, and the yearly output of silk-mixed goods is increasing rapidly.

Glass Walls for Buildings.

AN architect in the State of Iowa has devised a method of using glass for the outer walls of residences and public buildings, which he believes to be superior in all respects to other materials. His system provides for a steel framework supported by brackets attached to the beams of the floors, in duplicate, making two walls of opalescent wire glass, the glass being set in the framework.

The glass walls are, approximately, a foot apart, making an insulating dead air space to prevent loss of heat in winter and prevent undue heat in summer.

This system of construction allows of any arrangement of floor plan, because windows are unnecessary. The exterior will admit of any style of treatment.

The glass wall is fire resisting to a practical degree. It has been demonstrated that wire glass will resist a hot fire, and though it would be unnecessary to replace it the fire damage would be local and easily repaired.

The inside treatment allows of a marble wainscoting half-way to the ceiling, with glass over, so that wall space is available for desks, counters, shelving, etc., on all sides of a room. At the same time more light is produced than with windows.

The cost, compared to stone, terra cotta or brick, would be from a quarter to a third less for the outer walls.

Galveston's Great Sea Wall.—One of the greatest engineering projects ever undertaken in the United States of America appears in the great sea wall at Galveston, Texas, recently completed, which is the most extensive structure of its kind in the world. The wall measures 17,593 feet long, 16 feet wide at the base, 5 feet wide at the top and stands 17 feet above mean low tide, with a granite riprap apron extending 27 feet out on the Gulf side. The grade of Galveston is now to be raised to slope gradually from the sea wall.

A Pocket Umbrella.—An inventor living in Minneapolis, Minn., has devised a 26-inch umbrella which will fold up, frame and all, into a little case to be carried in the pocket. The handle and all the ribs consist of fine and very strong steel tubes in sections, which telescope one inside of the other. The covering is of very fine silk, which takes up but little room. The wooden handle of the umbrella is hollow, and receives all the rest of the telescoping umbrella rod when shut up. A small and light case, not too big for the pocket, is provided to contain the whole.

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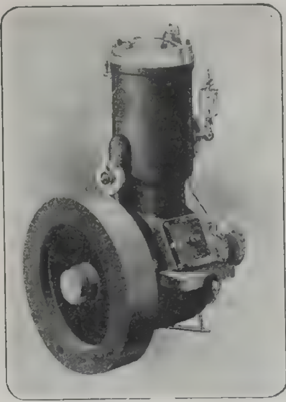

Lozier Two-Cycle Gasoline Engine, 3 to 7½ Horse-Power.

Lozier 31-Foot Cabin Boat, Purchased by the Brazilian Government.

Motors, $200 to $3,000. Boats, $400 to $25,000.
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Where the Subway Dirt Went.

A CORRESPONDENT wants to know what became of the 3,600,000 cubic yards of stone and dirt taken out of the ground in digging the subway rapid transit tunnel in New York. It is a question well worth answering.

When the contractors began work they set about finding a place where they could dump the excavated material at the least expense. A short haul meant speed and a comparatively small charge for the service. They soon ascertained that the Government would be glad to make use of the most of the earth and stone in extending the area of Governor's Island in New York harbor from 60 to 152 acres. Although thousands of cubic yards of the rock have been used in the construction of the sea wall, the work, which will not be completed until 1906, is hardly more than begun. By a curious coincidence Gen. Frederick D. Grant, in thus improving this military post, is fulfilling the dream of his father, President Grant, who predicted that Governor's Island could be made an effectual and everlasting barrier for the metropolis against any foreign foe. His prediction is being fulfilled in the spirit rather than the letter, since it is not as a fortification but as an army post for the concentration of troops and the disbursement of supplies for the Atlantic Division of the Army that the new island will be peerless as a garrison post on this continent.

While a great deal of subway material has been used there, really much more has gone toward filling in the shallows on the opposite side of the harbor. This new land will extend so far out from the old shore as to admit of a channel only a few hundred yards wide between it and Bedloe's Island. on which stands the Statue of Liberty. When one of the big clamshell dredges is filled with 500 tons of stone and dirt it is towed to the designated spot and scuttled, so to say. This scuttling is done by means of a false bottom to each of three compartments of the dredge. The dredge is kept afloat while unloading by means of an outer rim of air-tight compartments.

Free Ship Law Impracticable.

THE Merchant Marine Commission of the United States Senate has issued the following statement regarding the question of free ships, upon which several petitions have been received:

"In reply to definite questions whether American companies now owning foreign-built vessels would transfer them to the American flag under a free ship law, replies have been received from several steamship owners who are unanimous in the statement that there would be no incentive from a business point of view to transfer foreign-built ships to American registry if they would be confined exclusively to the foreign trade, but to remain without subsidy, differential duty, or any other Government encouragement, on account of the greater cost of operating vessels under the American flag than under some foreign flag.

"Without exception the American shipowners consulted by the commission declare that the passage of a simple free ship law would do nothing whatever to increase the American merchant marine."

Steel Cross-Ties for Railways.—With the steady depletion of the timber resources upon which American railway companies have drawn for cross-ties for their roads, the question of future supplies of that indispensable construction material has become a problem of grave concern. It is interesting, therefore, to observe that the managers of one of the most extensive railway systems in the United States have ordered 7,000 steel cross-ties to be put in along various sections of road. It is asserted that the original cost of the steel ties will be very much more than made up by the length of time they will wear, and the manufacturers predict that in a few years practically all the great railroads of the country will be using steel instead of wooden ties.

New Way of Laying Tiles.—A novel method of laying tiles has been devised by a designer in Indianapolis, Ind., U. S. A. The tiles are laid in sections on strong paper in the factory, leaving room for the cement between them. They are then placed on the bed of cement and allowed to set slightly while the paper is washed off, after which the cracks are filled with cement. This does away with the work of the artist who lays the design, it being completed in the factory.

Telephones on the Farm.—To show that the American farmer is keeping pace with progress in other industries it is only needful to say that he is an extensive user of the telephone, many agricultural communities supporting systems reaching to villages, elevators and shipping plants. It often happens that when buyers of hay, grain, cattle or other products offer a price to the farmer, he steps to the telephone, calls up the town dealer, learns the price and sells his produce without fear of being beaten.

Unique Telegraph Office.—After the recent great fire in Baltimore, Md., U. S. A., when it was supposed all the telegraph wires leading out of the burnt district had been disconnected, one was found that was still connected with New York. This wire extended along the trunk of a fallen telegraph pole, and messages were sent from this novel telegraph station to the metropolis. This was the first office opened in the business district after the disaster.

American Tobacco Abroad.—Exporters say that the demand for American tobacco is unusually large. Eighty carloads, containing 800 hogsheads, or 3,200 tons, valued at $960,000, will be shipped to the Orient from Portland, Ore., this month.

Missouri Cement.

AT Hannibal, Mo., enormous deposits of cement, said to be fully equal to the world-renowned Portland, have been discovered. The cave made famous by Mark Twain in "Tom Sawyer" is the center of this valuable deposit, and already hundreds of men are employed in digging the hills away piecemeal. In a few years the walls of this beautiful cavern, immortalized in the literary classic, will be spread over the face of the earth in the shape of viaducts, retaining walls, bridge pillars, monuments, houses, breakwaters and the many thousands of uses to which this material is adapted. The establishment of the cement works just below Hannibal has placed this town in the ranks of first-class cities. Fifteen hundred men are now employed at the works, and a new plant has just been completed which will give employment to as many more. With the new plant the concern will be able to produce 9,400 barrels of cement per day, 400 pounds to the barrel. The works have enough material to last for years.

Improved Lime Kiln.

D. H. GIBSON, of Seattle, Wash., is the inventor of an improved lime kiln which allows continuous working and also is so arranged that the burning of the limestone may be shut off for a time without requiring the fires to be drawn in the furnaces.

The stack of the lime kiln is lined with firebrick and the upper portion is provided with charging doors for the introduction of the limestone. If it is desired to stop the burning completely for a day, or a few days, without drawing the fires on the grates, it is only necessary to close up all the valves, thus preventing the draft from passing up through the grates and causing the fuel thereon to burn slowly without generating much gas. A number of peepholes are provided in the sides of the kiln to permit inspecting the progress of the burning and to allow of introducing stirring rods in case the material becomes choked in the stack.

New Corn Harvester.

WHAT is believed to be a valuable addition to farming machinery is a corn harvester which has recently been placed on the market. Cornstalk cutters and binders have been in use for some time, but this is the first practical machine, so it is claimed, that will tear the ears from the stocks as they stand in the field. It is built of steel and malleable iron and does not easily get out of repair.

The reports of the work accomplished by these pickers indicate that they are being successfully used. From Macedonia, Ia., comes a report that one of the new pickers, in corn running about sixty-five bushels to the acre, heavy and not very ripe, picked a wagon load—that is, twenty-five bushels—in twenty-three minutes. This appears to be a fair indication of what these machines can accomplish.

Plimsoll's Mark for American Ships.

AN effort is being made by the American Association of Masters and Pilots to get Congress to pass an act compelling all American vessels to carry the so-called "Plimsoll's Mark" on their sides. The British Government many years ago adopted the use of the mark, which is made on the ship's side to indicate how deep it may be loaded, so that the passenger or the shipper of freight may know whether its owners are carrying a heavier cargo than is permitted by law. American vessels carry certificates of inspection, but they are not so readily seen as the Plimsoll's mark.

Automobiles for Police Service.—Several American cities are using automobile vehicles for police patrol service with great success. One claim in favor of the automatic police patrol wagon is that prisoners thus conveyed to station houses are more secure against mob attack than when carried in horse-drawn vans. The mere fact that the automobile is dependent not on horse-flesh, which is liable to give out, but on mechanism which is certain and can also attain a speed which would strike terror to the hearts of the average mob are two great elements in its favor.

Preservative for Cheese.—As a preservative of cheese the dairymen of the State of Wisconsin, U. S. A., have had great success with paraffine, a product of petroleum. The method is to take the cheese as it comes from the press, and dip into hot paraffine. This makes a coating impervious to air or moisture, hence a cheese so treated will keep longer and better.

Our Trade with Cuba.—That the reciprocity treaty with Cuba, which went into effect December 27, 1903, has greatly stimulated the volume of exports from the United States to that country is shown by statistics recently published. During the first nine months of 1903 our exports to Cuba amounted in value to $16,752,179. For the corresponding period this year they were $22,717,378, or an increase of 35 per cent. The most notable increases were in lumber and furniture.

Improved Policeman's Club.—A Chicago man has invented a policeman's billy that combines a club and a revolver. The handle carries a hammer and trigger mechanism, and when desired the handle and club may be separated and a revolver cylinder applied between them, thus converting the mace into a revolver.

PRATT & WHITNEY CO., SMALL TOOL DEPARTMENT

TAPS, DIES, REAMERS, MILLING CUTTERS, RATCHET DRILLS, BOILER PUNCHES, TAPER PINS, GAUGES, ETC.

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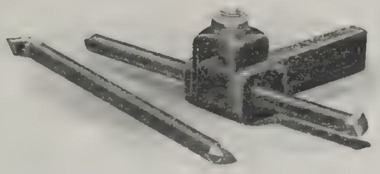

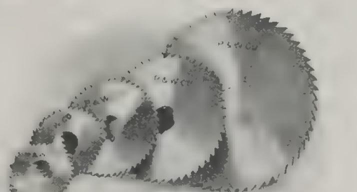

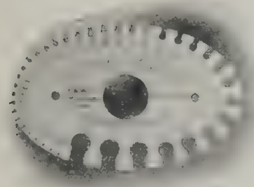

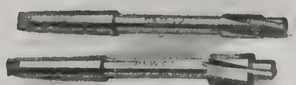

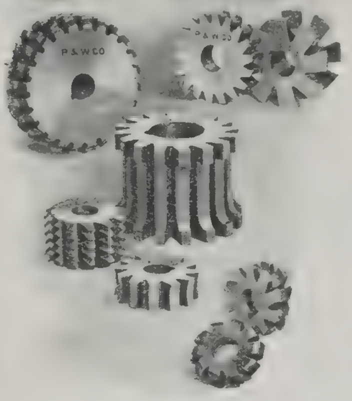

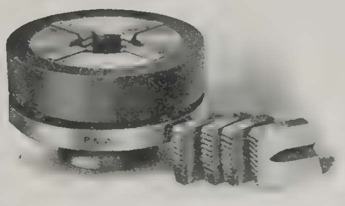

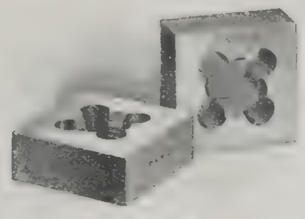

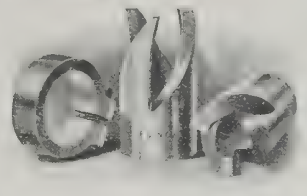

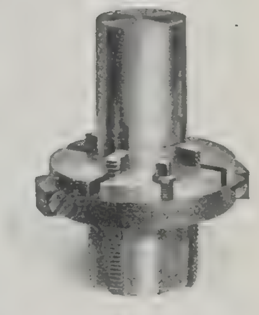

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INCORPORATED. CAPITAL, $500,000.00.

CHICAGO, U. S. A.

The Mills-Chicago.
With Music Box.
Weight, boxed for shipment abroad, about 340 lbs.

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Largest Manufacturers and Exporters in the world of all kinds of

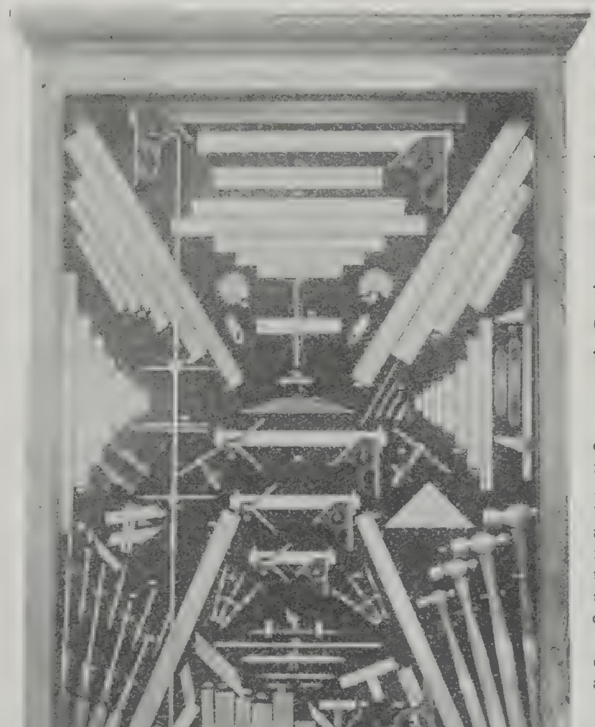
Coin-Operating Machines.

Our 80-page catalogue, just issued, profusely illustrated, in colors, describing the many styles of **Coin-Operating Machines** made by us, will be mailed postpaid to all parts of the world.

Nearly all our Coin-Operating Machines can be made to be operated by the coin of any realm.

All machines are boxed ready for steamer, and prices quoted will be f. o. b. cars New York or San Francisco. Orders received through export houses. When ordering through export houses specify MILLS NOVELTY CO.'S COIN-OPERATING MACHINES, and to avoid errors, please mail us duplicate of order.

THE SAWYER TOOL MFG. CO.'S "SILENT ADVERTISER"



An Excellent Method of Making a Practical Display of Machinists' Tools at a Small Cost.

Consisting of a case, made of quarter-sawed oak, finely finished, about three feet wide, five feet high and four and a half inches deep. The glass door in the front opens, allowing easy access to the tools.

When submitting an estimate for one or more of our "Silent Advertisers," we select the latest, up-to-date and most salable machinists' tools, and charge the latest list price, less the regular trade discount.

The terms that we quote include boxing and delivery f. o. b. New York.

Our 54-page Catalogue, illustrating and describing the various styles and sizes of Fine Machinists' Tools and Hardware Specialties made by us, mailed postpaid, to all parts of the world.

SAWYER TOOL MFG. CO.

FINE TOOL MAKERS,
FITCHBURG, MASS., U. S. A.

American Saw-Mill Machinery.

ONE of the most important industries in the United States is the manufacture of saw-mill and wood-working machinery, which, as it has developed within the past few years a comparatively large export trade, is well worthy of consideration by all our readers.

Undoubtedly the first power saw mills were the old-fashioned upright or Mulay mills, which were probably first used in France. Shortly after the settlement of this country, the New Englanders began to use water-power mills, and these mills were employed quite extensively in the United States after that time—equipped solely, however, with upright saws.

Early in this century experiments began to be made with what is known as the circular saw; and in time, on account of its rapid production, this variety of saw became almost universally used. At first it was necessary to employ very thick blades, which caused a great waste of material; but with the introduction of improved steel and improved methods and machinery, circular blades nearly as thin as the old-fashioned upright saws were finally made to work successfully.

Circular saws for sawing lumber from the log have never been extensively used outside of America, probably owing largely to the fact that expert circular sawyers are not to be found in other countries, and, further, the saws and the mills of other countries are very inferior to those of America; and also because of the thickness of the cut and consequent greater loss by sawdust of the circular saw.

The broad statement that American saw-mill machinery is much superior to any made abroad, though unquestionably true, will no doubt be challenged by foreigners who have not had experience with the American machinery. But those who have had experience in operating English, French, German and American saw mills of various types will confirm the assertion, and a little investigation will prove it beyond a doubt.

An instance came to our notice some little time ago, where one of the principal English manufacturers of saw-mill machinery, finding that English saw mills in one of the South American countries were being rapidly supplanted by saw mills of American make, instructed their agent in that country to purchase one of the most popular American mills that were being sent out there, and forward it to them in England, where a copy of it was made and returned. This mill was sold and erected, but as it failed to give the satisfaction that the American mills which were being operated in the same district were giving, it was condemned and an American mill ordered in its place.

This is not an isolated case. A number of similar instances have come under our notice. There is a peculiar knack in manufacturing and operating saws and saw mills which is only acquired by years of experience and careful training, and manufacturers in America possess the great advantage of having hundreds of men at their command, schooled from boyhood in the art of operating saws and timber-reducing machinery, and who can almost by intuition detect the slightest defect in the saws or in the machinery employed by them in doing their work.

The reasons why Americans (and in this term we include Canadians) make superior machinery of this class are obvious. Since no other country in the world has ever produced, or is now producing, anything like the same quantity of lumber as America, our manufacturers have found it necessary, on account of the increasing value of the lumber and skilled labor, to take advantage of everything that might reduce the labor and improve the production in either quantity or quality, and there is no one, having any knowledge of the inventive genius of our people, who will not readily admit that they are pre-eminently quick to perceive and to supply the best means for accomplishing any desired purpose, and especially is this true when, as in the lumber industry, the conditions are favorable and the necessities urgent.

For many years the steel used in the manufacture of saw blades was imported. Now, practically speaking, the steel used in the manufacture of our saws is all made in this country. It was here also that the inserted and bit-tooth circular saws now so extensively used were invented and first made, especially for the large circular saws which are generally sent to foreign countries, owing to the greater ease with which they are kept in working order, and also because the diameters of such saws are not materially reduced by long use, as is the case with solid-tooth saws.

For many years, owing to the enormous tracts of timber land in America which it was desirable to clear off for agricultural purposes, no thought was taken of the great waste caused by the cutting of timber with thick circular saws, quantity being the first consideration. As a very large output was desired, thick blades were employed, in order to be able to saw rapidly; and many circular saw mills in this country, even with a single saw, cut as high as 10,000 feet of one-inch lumber in an hour. Sometimes even larger quantities than this are cut and a day's production is commonly from 40,000 to 50,000 feet. When the amount of power and of cutting necessary to produce this output is considered, it will be readily understood that great care must be taken of the saw and the machinery.

Now that timber lands are scarcer or more remote, the subject of economy in the cutting of lumber has become a question of great importance, and the manufacturers of saw-mill machinery have been compelled to produce mills that would cut a corresponding quantity of lumber without so great a waste in sawdust. The gang saw extensively used in large mills is not practicable for this work in the smaller mills, nor is it possible with the gang mill to take advantage of the different qualities of lumber that may be in a single log, as with the circular mill. The only thing left then, apparently, was to take up and perfect the band mill. Probably, the first band mill known was the "Newberry," invented early in this country. At that time the thinness of the kerf or cut made by the saw was not the quality that recommended its use. As mentioned before, quantity in cut, and not economy, was the standard. Thinking men, however, perceived the fact that the time must come when, owing to the great waste of the circular saw, it would have to be done away with, and something more economical employed in its place. This, therefore, kept the band mill alive, and constant experiments went on, to perfect this mill and the saws employed, until now a 15 or 16 gauge band saw is made to produce about as much lumber in a given time as a 6 to 8 gauge circular saw.

France, we believe, claims the first band mill for log sawing, and this was brought to Canada about the year 1870. Owing to defective saws, and the small experience that had been had with band mills, it was not a great success, but it showed the possibilities of its ultimate employment for sawing logs into lumber. This being the case, practical experiments were made with it, until at the present time the American band saw for cutting logs stands far ahead of any machine of its kind ever made. To gain this, not only the machine itself had to be perfected, but saws had to be produced that would run successfully on these mills. This also American skill accomplished, and we are no longer depending on England, France or Germany for band sawmill machinery, but are actually beginning to return the compliment by sending mills and saws to the countries to which we formerly had to look for these machines.

Band mills are now made to compete in quality and output with the best circular mills, at the same time saving in lumber from 7 to 20 per cent., according to the thickness of the stock into which the logs are cut. This result has been reached within a comparatively few years, and improvements will doubtless continue.

By referring to the advertising columns of English and European trade journals, it will be noticed that many of the cuts and descriptions of the leading saw mills and machines therein contained are, in reality, those of American machines. We fail to see how a greater compliment than this could be paid to American manufacturers and American ingenuity.

The term "wood-working machinery" applies more particularly to those machines employed in manufacturing lumber after it comes from the saw mill. It is possible, by the aid of the wood-working machinery now produced in America, to perform nearly every detail of the work of dressing and finishing woods, even in the most complicated and delicate designs. American wood-working machinery is largely exported, and the trade continually increases. At present it would be difficult to find any large or well appointed wood-working establishment in any country of the world that does not contain machines of American manufacture, and invariably the proprietors speak most favorably of them.

Prepaying Foreign Postage.

A FOREIGN reader calls attention to "underpaid postage" on mail matter sent abroad from this country. His comment is as follows: "Being attracted by one of the advertisements in an American journal, I wrote for further particulars. In return the advertiser sent me a letter enclosing a booklet. The letter was sealed and, with the booklet, weighed considerable. A 2-cent stamp was all that covered the letter. The London post-office collected a shilling and two pence (28 cents) as 'underpaid postage.' This was not all. Owing to the firm's 'follow-up' system, they sent another letter and another booklet. A 2-cent stamp covered this also, and in consequence I had to pay another shilling and two pence for underpaid postage. My inquiry cost me 56 cents in excess of underpaid postage. Now, I thoroughly realize that the delinquency did not arise from the manufacturer's meanness, but was the evident fault of the stamp clerk, who is generally the office boy."

An incident such as is described by the reader just quoted is certainly exasperating and does not aid the business of the American export houses. Apology is due to foreign buyers who have suffered through such carelessness. It is suggested that a word from the buyers to the advertisers, at the time of making inquiries, will soon rectify mistakes and omissions of this character. Exporters to foreign markets do not condone even trifling inaccuracies where it is likely to interfere with the freedom of buyers in making requests for information as to their goods and methods.

Aluminum Cars.

NEW aluminum cars in use in passenger subways in the United States present a clean and really artistic appearance. They are at the same time absolutely proof against fire. Aluminum is rapidly taking the place of many other materials on account of lightness and toughness. One of the drawbacks has been the tendency of this metal to tarnish. This tendency has hitherto prevented its general use in plated ware; there is now, however, a fair prospect of this difficulty being overcome. The announcement is made in a journal devoted to electric chemistry of a process by which aluminum can be given a coating of any desired metal. The film of oxide which covers the surface of the aluminum is removed by adding to the plating bath a small quantity of soluble fluoride, and the metal then receives a superficial coating of zinc or copper, upon which silver or gold can be subsequently deposited. The new process will doubtless be highly valued by the makers of opera glasses, photographic lenses, telescopes and other instruments.

Aluminum Smokeless Oil Heaters

EQUIPPED WITH SAFETY BURNER.

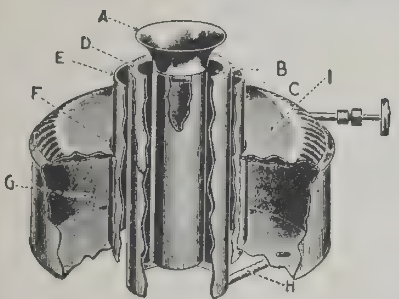
No. 1—Brass burner; removable fount; 8-in. circular wick; height (bail down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular wick; height (bail down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (bail down), 28 inches.

SPECIAL $35.00 OFFER

FOR FOREIGN MARKETS:

Upon receipt of $35.00 in U. S. gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29½.

OUR SAFETY BURNER. Note Construction.



A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

NOVELTY MFG. CO., Jackson, Mich., U. S. A.

MICHIGAN BARREL CO.

GRAND RAPIDS, MICH., U. S. A.

MANUFACTURERS OF

High-Grade Refrigerators

FOR EXPORT.

"The Great Sanitary Refrigerators."

YUKON REFRIGERATOR No. 313.

YUKON REFRIGERATOR

No. 313

Is made of solid ash. Has GENUINE GRANITE ROCK WOOL INSULATION, which is the most perfect non-conductor of heat or cold known to science.

White Enamel Provision Chamber

(Guaranteed PURE ENAMEL, BAKED on metal, NOT PAINTED.)

Patent Adjustable Sliding Shelves.

Removable Flues.

Net weight, 155 pounds. Gross weight, 240 pounds.

SPECIAL OFFER—FOR EXPORT ONLY.

Upon receipt of THIRTEEN DOLLARS AND TWENTY CENTS ($13.20), in U. S. GOLD (or its equivalent), we box, ready for transportation abroad, and deliver F. O. B. New York, ONE (1) YUKON REFRIGERATOR No. 313.

NOTE.—Our catalogue, illustrating and describing the various styles of REFRIGERATORS made by us, mailed postpaid. Orders received direct or through export house.

BARBAROSSA

is the most exquisite Bottled Beer in the World

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Moerlein's Bottled Beers are the model for Purity and Healthfulness

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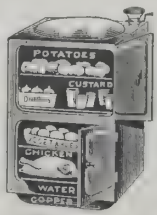
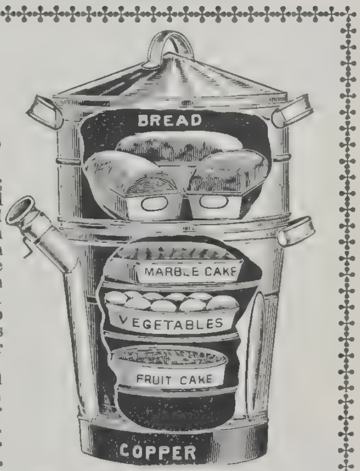
CINCINNATI, OHIO.

"IDEAL" Steam Cookers

FREE Book of 36 pages, printed in colors; handsomely illustrated; tells all there is to know about steam cookers—round or square. The 1904 models of "Ideal" Steam Cookers are entirely new in principle, design and special features. The only steam cookers made in which **both round and square have whistles** to call the cook when water is needed. Seamless copper tank bottoms.

Cooks a whole meal over one burner, on gasoline, oil, gas or common cook stove. Reduces fuel bills one-half. Agents wanted.





We Want Foreign Agents, and to get them quickly, we are making the following liberal proposition for this month:

No. 20, Sq., Copper Tank Retails $6.50 Each.
13-gallon food capacity. 12 Cookers in a box. Measurements and weights of boxes holding 12:
Gross weight, 210 lbs.
Net weight, 144 lbs.
Cubic feet in 12—28.
$39 doz., f. o. b. N. Y.

No. 6 Round Cooker Retails $5.00
10-gallon capacity. 12 Cookers in a box, nested, solid. Measurements and weights, 12 in a box:
Gross weight, 150 lbs.
Net weight, 120 lbs.
Cubic feet in 12—11 1-2.
$33 doz., f. o. b. N. Y.

These are our best sellers, but we make thirty different sizes of Cookers. Boxed ready for steamer. Order direct or through export house; in latter case, mail duplicate order to us to avoid errors.

We manufacture a full line of Kitchen Specialties and Blue-Flame Wickless Oil Stoves.

TOLEDO COOKER CO., 2301 Albion St., Toledo, O., U. S. A.

The Manufacture of American Watches.

As we pointed out in our articles on American pianos and organs, one of the most striking illustrations of American inventive and constructive skill is to be found in the wonderful advances made in the United States in the manufacture of articles of luxury in all branches of the fine arts. These branches are usually and naturally the last ones to be taken up and mastered in any country; and in the Old World excellence in these lines of production has been attained only after centuries of endeavor. So, while it is not surprising that Americans should have come quickly to the front in the manufacture of agricultural machinery and labor-saving tools and implements of all sorts, it is a matter of great surprise to Europeans that we are already able to compete with the older nations on even terms in the various lines of artistic production, and that in many of these lines, such as musical instruments, watches, jewelry, silver and plated ware, cut glass, etc., we can justly claim superiority to, or challenge comparison with, the manufacturers of other countries.

The supremacy of the American watch has been admitted for many years past. In spite of the great prestige and severe competition of the Swiss, English and French watches, the American watch has won its way into the special favor of the world at large, and has now attained the leading position in the world's markets. This is shown by the statistics of the production and sales of our watches, both at home and abroad. Forty years ago, before the establishment of our great watch manufacturing industries at Waltham, Elgin and elsewhere, the people of this country, in common with all mankind, were dependent upon the watchmakers of Europe for their supply of pocket timepieces. Now, on the other hand, there is practically no market in this country for foreign-made watches, while our watches are in universal use in the United States, and are exported in large and ever-increasing quantities to all of the other nations of the earth. The European watches, which were the only ones in use half a century ago, were made according to the old-fashioned, slow, inaccurate process, and the supply was inadequate, expensive and generally unsatisfactory; but the invention and application of American watchmaking machinery has completely revolutionized the industry, and has resulted in the production of watches by the million, and for the million, instead of by the thousand, for the comparatively few who in former times could afford the luxury of a watch. Indeed, the many vocations in which reliable pocket timepieces are indispensable—involving, as these pursuits do, an important part of our commercial life—afford ample reason for regarding the watch as a necessity rather than a luxury.

A brief comparison between the methods of manufacture in this and those in other countries, which have led to this result, will be in the highest degree instructive. The earliest methods of making watches in Switzerland and other European countries was entirely by hand—one man devoting his life to a single detail of the construction, another to another, and so on—the combined efforts of all these separate activities finally producing a complete watch. The workmen were, as a rule, very skilful and faithful, and the watches were good watches, undoubtedly, though necessarily expensive; but they were not by any means perfect, for they were the product of fallible human hands. The combination of a multitude of different individualities in their manufacture could not but result in many errors and, so to speak, "misfits." Later, following the example of the Americans, the foreign makers adopted machinery to a considerable extent, but not in any complete or elaborate manner. Nowhere in Europe, save perhaps with one exception, is there a plant such as we have in several towns in this country, where watch movements are started and finished under one roof. Much of the work is still done there by hand—a much over-praised method, which has some unquestionable merits, but many serious and inevitable faults—and the machines which they employ are scattered through as many establishments, all independent, widely separated, and without any of the harmonious cooperation so necessary to the production of a perfect whole.

In this country the system of manufacture is entirely different, and it must be evident to any intelligent observer that its results are much superior to those of the European system. In the first place, we have invented most extensive and admirable machinery for making and putting together the various one hundred and fifty parts of a watch movement. These specimens of intricate, delicate and scientific mechanism are among the finest and most wonderful products of the human mind. In the next place, American manufacturers have taken the utmost pains to apply to watchmaking the principle of simplicity, greatly reducing the number of separate parts or pieces in the watch, and thus lessening the chances of failure and breakage, and also cheapening the cost of production. In this way, by combining the use of scientific machinery with the utmost simplicity of construction consistent with perfect timekeeping qualities, the American manufacturers have insured the production of watches on such a large scale as to place the ownership of a good watch within the means of every person to whom a knowledge of the time is desirable. It has thus come to pass that American watches excel all others, and among their various points of advantage are the following:

1. The American watch is the cheapest. The establishment of very large plants, equipped with elaborate machinery, though entailing a large first cost upon the manufacturers, enables them to secure a very large production; while at the same time, by simplifying the details of construction, they are enabled to lower the cost of workmanship very greatly, while raising its standard, and thus bring down the cost of each single watch to a much lower figure than the European makers can, under their system of hand labor and unconsolidated manufacture.

2. The American watch is the strongest and least liable to get out of order. This is due to the same simplicity of construction, combined with the perfection in manufacture attained through the use of machinery.

3. The American watch is the best timekeeper. This superiority in point of accuracy is secured through the use of machinery which works perfectly in all cases without the slightest deviation, so that it is absolutely certain that all the watches produced by any of the great American establishments will be equally good and practically perfect in mechanism.

4. The American watch has another very important point in its favor, derived from the extensive use of machinery in its manufacture, and that is that all its several parts are interchangeable, so that in case of the fracture or injury of any part a duplicate can be obtained without difficulty and at trifling cost, and can be substituted by the local watchmaker or jeweler, with absolute certainty that the watch, thus quickly and easily repaired, will be as good as new.

None but the American watches can claim the merit of uniform excellence; this, too, is due to our American system of manufacture. As has been well said: "A machine that will make a part of a watch absolutely faultless, will make 10,000 such parts just as faultless. By means of micromatic gauges any deviation to the one ten-thousandth part of an inch can be detected by these machines. No human hand at its best can rival this exactitude. It is this unfailing, unerring automatism of the machine that gives the uniform quality to the American watch."

The practical proof of the excellence and superiority of the American watch is found in its popularity. Within forty years the watchmaking production of the United States has grown from nothing up to ten or fifteen millions. The Waltham Company alone have produced, since their organization, more than 5,000,000 watches. Almost every American owns an American watch to-day, as it has been found, by universal personal experience in this country, that the American watch is on every account preferable to the European watch; and this opinion is rapidly gaining ground in other countries, to which we export watches every year in amounts ranging up into the hundreds of thousands of dollars. Nothing is more certain than that these exports will continue to increase in geometrical ratio, as the many advantages of the American watch become familiar throughout the world.

Concerning Tinned Goods and Preservatives.

The order issued by the Department of Agriculture of the United States of America, to take effect this month, applies to all manufactured foods, foreign and domestic alike, is being strenuously opposed. This is particularly true of the imports of European tinned and preserved food stuff. The foreign manufacturers are keenly interested in the Departmental order, as it now becomes necessary for their labels to state clearly what, if any, preservatives are used in the manufacture of a specific product. This requirement does not include the naming of accepted alimentaries as sugar, vinegar, wood smoke and salt. It does, however, refer to all coloring matter. Copperas is much used to give the clear, bright shade of green to peas, and is therefore interdicted. Labels must show in the case of each product what chemicals, if any, have been used.

The number and quantity of chemicals and adulterants being used, both as preservatives and to improve the general appearance of tinned stuff,* is ground for considerable reflection.

Whatever tends to improve the appearance of preserved foods has come to be regarded a necessary adjunct to their manufacture. This is true even where the use of chemicals in quantities proves harmful to health. It is practically admitted that the largest consumers of tinned and preserved stuff are not those who buy expensive brands, as with such buyers in many cases price supersedes quality. It is not remarkable therefore that chemicals and substitutes are resorted to by manufacturers of the cheaper brands in order to cheapen the cost of production. What is remarkable, however, is that Dr. Wiley, Chief of the Bureau of Chemistry of the United States Department of Agriculture, claims to have discovered the most excessive cases of substitution in the highest-priced imported preserved foods.

The importation of tinned goods into the United States runs into millions; hence the Government rightly contends that the public health is endangered by the use of chemically treated foods. Too little attention is paid by the masses to the food they eat. The lack of specific or abstract knowledge of hygienic laws and the influence of impure food on general health has been demonstrated to the satisfaction of the Government, and, although the use of such tinned goods is not prohibited, it is the purpose of the Department to supply full knowledge of the preservatives and coloring matter to those who desire to purchase.

The enlightened buyers regard the steps now being undertaken as important. Many are apt to discredit the assertion that chemically treated foods are dangerous to life; but it would seem that Dr. Wiley has settled the question beyond reasonable doubt in making public the result of a long series of tests made on young and healthy men. These men subsisted for weeks on foods treated with borax and other chemicals and clearly showed a general derangement of their health as the effect of using food so treated.

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*Tinned goods are known as canned goods in the United States.

Quality and Price

are the first considerations when making a purchase.

Both these essentials are contained in the

Schroeder

1904 MODEL

Roller Gearing, Rotary Washer.

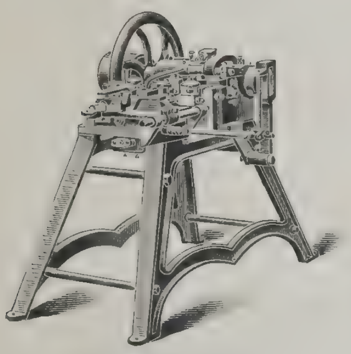
**Lightest to Operate.
Best Construction.**

Furnished with detachable legs for export. We also manufacture the "**B. B.**" and "**Brammer**" **Rotaries**, also several styles of Lever Washers—round or square. Write us for further particulars

BENBOW-BRAMMER MFG. CO.,

The Pioneer Washing Machine Manufacturers,

St. Louis, Mo., U. S. A.



Wire Nail Machine.

MACHINES FOR MAKING

Wire Nails.

Orders filled through commission houses.

Send for Catalogue "N."

KIMBALL BROS. & SPRAGUE

Brockton, Mass., U. S. A.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the

WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The **White Lily (Rotary) Washer** is made from **Louisiana** and **Mississippi Red Cypress,** which is less susceptible to expansion and contraction caused by hot or cold water **than any other timber known. Our hinges are put on with bolts instead of screws,** and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2⅜ turns of the fly-wheel to one turn and return of the dasher. **The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.**

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** ($30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements; 18x24x24 inches.

WHITE LILY WASHER CO.,

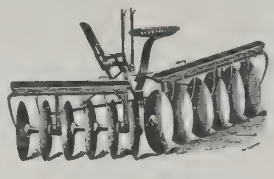
MANUFACTURERS,

DAVENPORT, IOWA, U. S. A.

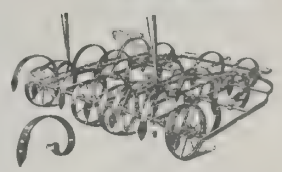
RODERICK LEAN

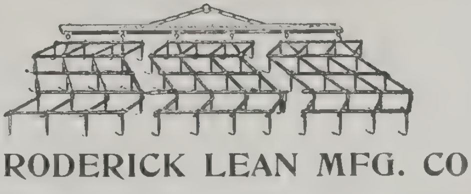
FARM IMPLEMENTS

"In Use Wherever the Sun Shines."



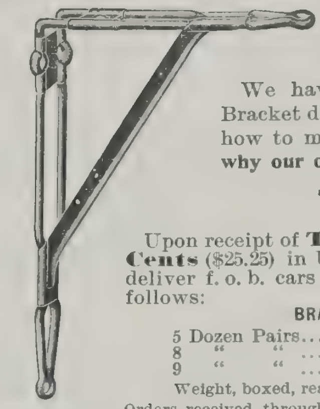
Variety of kinds suited to the requirements of any country Correspondence solicited. Catalogues furnished in English, German and Spanish.





RODERICK LEAN MFG. CO., Mansfield, Ohio, U. S. A.

Bradley Steel Shelf Brackets



BRADLEY BRACKET.

"THE MOST POPULAR BRACKET MADE."

We have made nothing but this Steel Wire Shelf Bracket during the past eleven years. We have learned how to make it, and are willing to sell it low. **That is why our output is close on to 11,000 Brackets each day.**

To Introduce Abroad:

Upon receipt of **Twenty-five Dollars and Twenty-five Cents** ($25.25) in U. S. gold, or its equivalent, we will box and deliver f. o. b. cars at New York City **Our Special Offer** as follows:

BRADLEY BRACKET ASSORTMENT No. 1.

5 Dozen Pairs	4x5	5 Dozen Pairs	7x9
8 " "	5x7	5 " "	8x10
9 " "	6x8	1½ " "	10x12

Weight, boxed, ready for steamer, 200 lbs. Size of case, 42x23x18 inches.

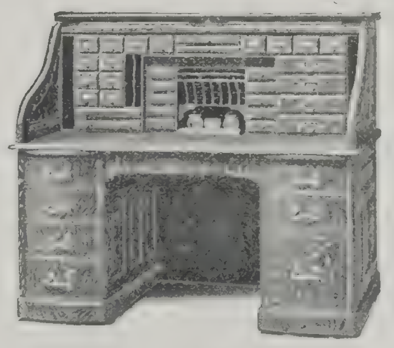
Orders received through export houses. Please specify "Bradley," and when ordering, to avoid errors, mail us duplicate of order.

ATLAS MFG. CO., New Haven, Conn., U. S. A.

MOON DESK CO.

Muskegon, Mich., U. S. A.

Cable Address: "MOON," Muskegon.



No. 63, Grade 1.

Manufacturers of

- **Roll-Top Desks**
- **Flat-Top Desks**
- **Bookkeepers' Desks**
- **Typewriter Desks**
- **Filing Cabinets**
- **Typewriter Stands**
- **Directors' Tables**

No. 63. 60 inches long; 36 inches wide; 52 inches high; weight, 400 pounds.
No. 64. 66 inches long; 36 inches wide; 52 inches high; weight, 430 pounds.

A VERY handsome swell-front desk. Four letter-file drawers with cast brass label-holder pulls, each drawer supplied with index and our special compressing device; 14 cherry pigeon-hole boxes 11 inches deep, with quarter-sawed-oak fronts; pigeon-hole boxes are trimmed with cast brass label-holders and highly polished cast brass knobs; bracket drawers. Large swell-front center drawer.

Pedestal drawers have handsome cast brass ball and socket pulls. No charge for inkwell set.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

American Harvesting Machines.

THE general use, though not the *idea,* of machines drawn by animals to harvest wheat, rye, oats, barley and grass, originated in the United States, just as a similar introduction of the cotton-picker is now originating here. The term "harvesting machine" is popularly confined to reapers, binding harvesters and grass-mowers, and, as accessories to mowers, horse hay-rakes and loaders. The United States also furnishes good animal power machines for harvesting potatoes, beans, beets and rice, the rice-harvester being a mere adaptation of the grain harvester; but the statements of this article apply principally to grain and grass cutting machines.

Reapers (non-sheaf-binding) are quite generally becoming displaced by the more useful binding-harvester.

England, France and Germany are the only countries where there are any serious attempts to compete with the United States in making harvesting machines; and their products are merely incomplete copies of the American pioneer implements.

The English copies are made with much useless added weight, increasing the draught and the wear and tear from jolting—no other elaborate machinery being liable to such rough travel as mowers and harvesters. The English mechanic loves ponderosity and massiveness for their respectable appearance. American inventors have the advantage of experience and observation in a vast agricultural domain. Their experience is unknown to the Englishman, who, when copying his American-made model, modifies the lines to harmonize with those of his grandfather's van.

The French copies are touched up with complications, to make them more *intéressantes.* The French mechanician loves convolutions, mystery and intricacies for their impressiveness to the eye. The French makers, in copying machines of American origin, have the grace, or diplomacy, to mark the copy with the name of the originator—thus: "Systéme Wood" on mowers, "Systéme Hollingsworth" on rakes—a concession to prestige which the Briton and German do not grant.

The German copies are degenerate reproductions by the simple plan of using the American pieces as foundry patterns. It is a redeeming feature of German-made harvesting machines that they are few. The German maker loves frugality for its own sake. He buys an American machine that he has seen working satisfactorily in the field, pulls it apart and uses the metallic pieces to mold from directly in casting pieces for new machines. Owing to the shrinkage and warping, incident to the cooling of castings and well known to every mechanic, the new parts are, of course, always a little too small and more or less distorted; while the material in them is unsuitable, from not being varied for the specific uses of different parts, as are the selected steels, malleables and wrought irons of American machines.

So much for a conspicuous national peculiarity of each of these foreign imitations. In details the American machines strongly excel. How?

1. In interchangeability of pieces, made as they are, not by un-uniform hand work, but on American automatic shop machinery, capable of turning out an unlimited number of perfect pieces precisely alike and fitting any harvesting machine of the given style. This insures not only perfect working, but cheap repairing. Some of the oldest American makers keep in stock all the pieces for every machine they have ever made, and this involves, in the case of such an establishment, the preservation, on shelves in branch warehouses in different countries, of thousands of kinds of pieces to provide against repair emergencies.

2. From the concerted adoption by United States machine shops of the universal gauge system for common articles like bolts, taps, dies and screws, so that farmers can get them from any hardware dealer; whereas, in many European factories, these are purposely made unique to compel patrons to depend on the same source when new ones are wanted for a machine made there—a species of strategy which ought to defeat itself.

3. In simplified mechanism. The American inventor loves to improve his inventions by simplifying shapes and movements as fast as he gains enabling experience and knowledge, making them strong, comprehensible, durable and economical to produce. Thus improvements appear unexpectedly every year in the details of American harvesting machines, while European machines remain unimproved year after year.

4. By selection from many qualities of iron and steel, smelting, forge and steam coals, and species of wood not abundant or available in Europe. This is partly owing to the wide variety found in the United States; our malleable and gray iron foundrymen having become adepts in choosing, combining and treating the many coals and ores from iron and steel accessible from the different sections, so as to adapt each casting or forging to its intended duty; and our wood-workers, having the choice of American timbers of many characters, including the stout, stiff, dense red and white oaks; semi-hard beach and maple; tough, fine-grained, limber ash and hickory; light and flexible, but lasting poplar, elm and birch, and many other abundant natives of United States forests denied to other makers; but in greater part owing to the immense system of railway transportation which unites four million square miles of area into a neighborhood free from the interruption of jealous internal frontier lines bristling with import taxes. Widely distributed water-power had given the great factories an early start before the railways made materials everywhere available.

5. In the skilful union of lightness and strength. It is found necessary to construct these machines firmly for the very rough land of some localities, but also light enough for the vaster stretches of soft alluvial land called "prairie." In attaining needed lightness, strength has actually, from the means employed, been increased. The supplanting of wood by metal, of cast iron by malleable, rolled and forged, and of these again by steel, and of solid by hollow pieces, during the last few years, has not only reduced the weight of mowers and harvesters about 20 per cent., but has in a much greater ratio increased their strength to resist shocks, their permanency in shape, and their resistance to journal friction.

6. By adopting the American chain-belt gearing in place of cog-gears, materially lessening wear and difficulty of repair—but, still more important, doing quite away with the exact shaft spacing and alignment for cog-work.

7. In the fact observed by traveled experts that the European-made imitations are apt to be several seasons behind the American originals in bringing out improvements.

8. From a tendency to omit in copies some essential element of the imperfectly studied model. For example, in copying the American "Wood" mower, distinguished by its "underdraft," the draft pieces have been carefully retained but are connected close to the truck instead of to the scythe-frame—quite missing their purpose. In the government trials periodically held in the countries where these copies are manufactured they are defeated on their own ground by the American prototype.

Having stated "how" the American machines excel, let us now inquire: "Why?"

1. Because United States patent law fosters invention, having been framed for that purpose, and not, as elsewhere, to raise revenue.

2. Because the area specially suitable for grain-growing is immense, and the selling markets are made accessible by railways connecting interior regions and the seaports—railways, unlike many of those in Europe, planned for the strategy of industry rather than of war. The supply of manual labor is inadequate to the plans of farmers and provides a stimulating pressure for reliable machinery, which is readily distributed by the railways.

3. Because of the great number of farms worked by owners, whose widely felt influence exalts "the dignity of labor," dishonoring the useless idler, be he rich or poor. This agricultural proprietary class is a conservating power for good. It is not a stolid or stupid class. The best of our inventors, statesmen, philanthropists, scientists and merchants spring more or less directly from it, and many workmen in the shops are farmers' sons, enabled to be there by machinery displacing their work on the farms. These practical men understand the advantage of good machines. They know all sides of the subject.

4. Education is general. Nearly one-fourth of the total population is attending schools. Scientific and manual training are frequent, and the factories have supplies of trained young men to draw upon. True, inventors are not always deeply educated men; but doubtless the atmosphere of the schools around them arouses latent genius and replenishes their activities. Books and periodicals similar to THE AMERICAN EXPORTER, treating of industries and trade, circulate everywhere and disseminate knowledge.

5. The machines are made for the home country—a larger consumer of harvesting machinery than all other countries together. The makers compete in quality of machines, to secure home buyers. On the other hand, European manufacturers make comparatively few machines, and largely with a view to export. Americans have discovered the startling fact that hand harvesting wastes more grain than its entire wages would pay for—that the machine work is cheaper than hand work *gratis,* owing to the rapidity of the tireless machine. Day or night it stands ready to rescue the whole crop, in the very perfection of maturity, perhaps from the open jaws of impending storm. Thus we see the present grain yield of the United States several times as large as it could possibly be with hand-harvesting, and the quality has improved since the adoption of the machines so that damaged grain is now almost unknown to our millers and maltsters; while in quantity and quality the hand-harvested crops of Europe and India have not, during the same period, advanced at all, except in localities where machines have been brought from America.

In concluding these suggestions, let us call attention to the significant fact that the American harvesting machines have invariably carried off highest honors at all the World's Fairs.

New York's Subway Road a Success.—The new underground railroad in New York City, which was opened to the public on October 27th, carried 5,838,235 passengers during the first month of its existence. Official figures given out by the company for the first five hours of traffic, the proceeds of which were given to charities, showed 111,881 passengers. The actual daily average of traffic was 201,318, and the average daily receipts were $10,065.90. The opening of the Lenox avenue or East side branch just before last month closed will add enormously to the volume of travel during the next four weeks.

Tariff Revision.—It begins to look as though the next Congress will be compelled by public sentiment to take up the subject of a revision of the tariff. If this is done wisely and intelligently it will add materially to the nation's foreign trade.

—The Buckeye Engine Company, Salem, Ohio, U. S. A., have just issued a 125-page catalogue, illustrating and describing the various styles of stationary engines made by them. This catalogue will be mailed, postpaid, to readers of THE AMERICAN EXPORTER, upon application.

ANIMAL TRAP CO., ABINGDON ILLS., U. S. A.

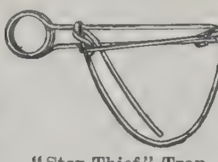
The Largest Manufacturers of

MOUSE, RAT AND GAME TRAPS IN THE WORLD.

Particular attention given to export orders. Illustrated catalogue free, giving full particulars. Order through your Exporter.

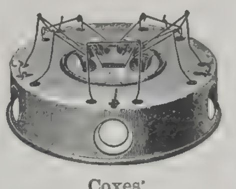
"Out o' Sight" Mouse and Rat Trap, also Imitations.

"Catch-'Em-Alive" Mouse Trap. Delusion Pattern.



"Stop-Thief" Trap, 4 sizes. For catching small fur-bearing animals.

Coxes' Self-Setting Wood Choker Mouse Trap. 1, 2 and 3 Hole, Square. 4, 5 and 6 Hole, Round.



Coxes' 5-Hole Metal Mouse Trap. Extra heavy. Well made.

Pennsylvania Rat Trap.

EXTERIOR VIEW.

UNITED STATES WASHING MACHINE CO.,

Successors to INTERNATIONAL MFG. CO.,

—MANUFACTURERS OF—

GALVANIZED STEEL WASHING MACHINES

Made of **galvanized steel, is absolutely germ-proof,** and is the only washing machine made that is **perfectly sanitary,** and that is **not affected by climatic changes.**

FOR FOREIGN MARKETS ONLY.—Upon receipt of **$11.00** in U. S. gold or its equivalent, we will crate (K. D.), ready for transportation abroad, and delivered f. o. b. New York, **2 United States Galvanized Steel Washing Machines.** Each machine occupies six cubic feet, and weighs seventy-two pounds.

Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

UNITED STATES WASHING MACHINE CO., Racine, Wisconsin, U. S. A.

INTERIOR VIEW.

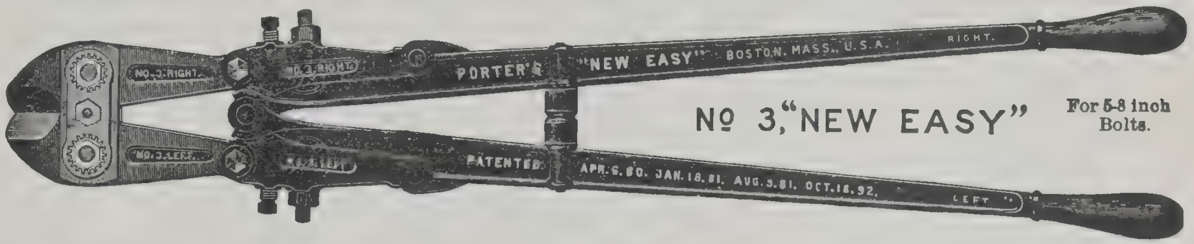
The "NEW EASY" BOLT CLIPPER

IS THE BEST.

MANUFACTURED BY

H. K. PORTER,

6 Ashland St., EVERETT, MASS.



Nº 3, "NEW EASY"

For 5-8 inch Bolts.

MONROE PORCELAIN REFRIGERATORS.

THE MONROE IS A HIGH-GRADE REFRIGERATOR BUILT FOR THE HOUSEHOLD.

Monroe Refrigerator No. 21. Style D.

Each food compartment is moulded in **one solid piece of porcelain. The corners are rounded.** There are no joints or crevices for the food to decay in. **The porcelain is white, durable,** and as easily cleaned as a china dish. **The ideal house refrigerator, absolutely sanitary.** The prices here quoted **for foreign markets only** (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, Oak Exterior, **$54.00**

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

MONROE No. 30, Style E, Solid Porcelain Inside, Oak Exterior, **$69.00**

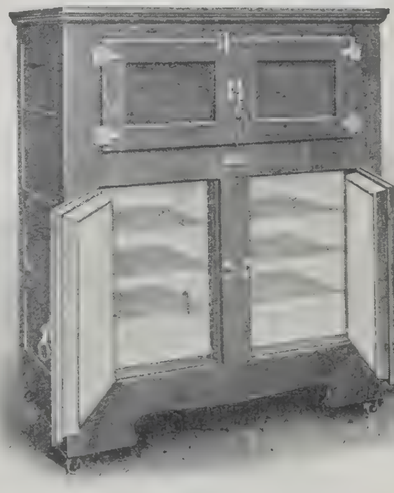
Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of **Solid Porcelain Refrigerators** made by us, mailed postpaid.

☞ Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, kindly mail us duplicate of order.

Specify "MONROE."



Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, LOCKLAND, OHIO, U. S. A.

AWARDED GOLD MEDAL at WORLD'S FAIR, ST. LOUIS, for BALL-BEARNG WASHING MACHINES

COST: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at $6.62½=$26.50.

SELLING PRICE: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at $14.00=$56.00.

Net Profit Over 100 Per Cent.

FOREIGN MARKETS ONLY. Upon receipt of $26 50 in U. S. Gold, or its equivalent, we will pack, ready for transportation abroad, and deliver f. o. b. New York, Boston, Philadelphia or Baltimore,

Two "1900" and Two "1900" Junior Ball-Bearing Washing Machines.

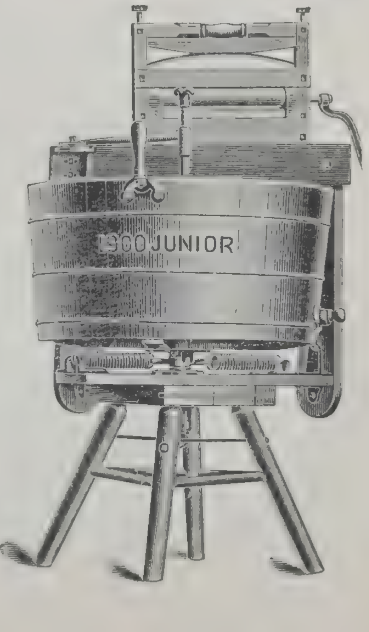
Weight of the above four Washing Machines, 250 pounds.

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-two years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment,** but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water,** thus **forcing the water through** the **finest** or **coarsest fabrics,** causing the clothes to become **absolutely clean, without boiling or scrubbing, without wear or tear, and without the use of chemicals.**

Send us $26.50 for two "1900" and two "1900" Junior Washers TO-DAY. We will ship the washers same day that we receive your order. In acknowledging receipt of your order we will quote your price of washers in car-load lots. You will quickly convert your sample order of four washers into cash, with a profit of over 100 per cent.

THEN YOU WILL ORDER IN CAR-LOAD LOTS.

Orders received direct or through export commission houses. When ordering through the latter, please specify "1900" and send us duplicate of order.



The "1900" Washer Company,

BINGHAMTON, NEW YORK, U. S. A.

Ores Located by Electricity.

ONE of the latest appliances of electricity is to make it the means of discovering lodes, reefs or strata in the earth's crust that contain metals. Its efficiency for that purpose has now been demonstrated, says the London *Telegraph.* In some respects the process employed resembles wireless telegraphy, with the difference that in this case waves of electrical energy are sent down into the solid earth, whereas Mr. Marconi's impulses are projected into space. It is now well known that if a current of electricity be put into the earth at any spot it can be made perceptible at a considerable distance away. If there were a wire connecting the two places the current would run along this conductor; it could be perceived at any part of it and scarcely at all elsewhere.

But the remarkable fact is that, if there be no wire or conductor, the electrical force or energy will be radiated in all directions. This is the first of the two simple principles on which scientific prospecting is based. The second, equally simple, is that, while earth and rock materials generally allow the passage of electricity through them in a regular and fairly constant manner, certain kinds of rock do not; some carry the electricity along with ease, and are, in fact, conductors, while others resist its passage, and are non-conductors.

All the metals practically come into the first class—they are channels along which electricity passes with ease; while quartz, the great gold-bearing rock, comes into the second category—it offers, like glass, great resistance to the electric current. Hence the problem of the ore finder was this—to throw into the ground electrical impulses, and by noting how these affected the strata beneath, to find out whether there were metallic veins, or lodes. The manner in which that problem has been solved is as simple as the principles on which the solution rests. The current put in at one place can be picked up, as Prof. Silvanus Thompson puts it, at another; and there exists one marvelously delicate means of doing this, with which everybody is now familiar—the telephone. To the trained ear of the electrical prospector these sounds bring the intelligence whether there are conducting metals below or not.

Suppose we have two operators; one is sending electric waves into the ground, the other with a telephone receiver to his ear listens to a succession of quick taps—like a woodpecker tapping at a tree. If these are regular and normal nothing is to be said, but if there are over or under tones, if the sounds rise and fall in certain directions, then there are metallic conductors, lodes or reefs present, ores in some shape or other that are producing differences in the waves and sounds. The expert listener can judge with surprising accuracy how deep the lode is and in which direction it runs.

The apparatus by which this result is rendered possible is the invention of Leo Daft, an American, and Mr. Williams, an Englishman. It is extremely ingenious, and in the hands of experts admits of the most delicate manipulation. The essential principle of its working is that it emits not a continuous current, but a series of little, short, sharp impulses; these go forward in all directions, and when they meet with quartz-rock or metallic lodes the waves are so modified that the listener can form a judgment where the ore-bodies causing the variation of sounds are situated.

This has now been fully demonstrated in regard to the metals galena and zinc, lead, copper, hematite, magnetic iron, nickel and cobalt, gold and silver. The location of hematite deposits in the Barrow mining district proved its efficiency. An area was allotted for the experiment, and in a very short time electrical evidence was obtained of the presence of hematite, and apparently in considerable quantities.

The apparatus indicated the position of the deposits, and this was done so accurately that when the company put down a bore hematite was found at about the depth adjudged, and the discovery is likely to prove of great importance.

Meadow Grass and Furniture Manufacturing.

WIRE grass, or carex stricta, from the marshes in the western part of the United States has, for several years, been profitably utilized in the manufacture of furniture, upholstery fiber and articles of similar character. Not until recently, however, has a way been found to use hundreds of thousands of acres of meadow or marsh grass which grows in the Eastern States. This peculiar grass, because of its short length, could not be worked in the wire-grass machines heretofore installed. All difficulty is now removed through the perfecting of machinery which will not only successfully manufacture from wire grass but also from all varieties of meadows and marsh grasses, including even the common cat-tail.

Factories now being erected for the new machinery include arrangements for quite exhaustive treatment. The grass passes through a number of stages. It is first converted into twine; then twisted into rope. Some of it, says a writer in the *Furniture World,* is turned over to the furniture makers, while that which is intended for rugs or matting is conveyed to loom rooms, where it is made up in every variety of design by specially constructed machines.

The waste ends are collected automatically and carried to machines, where they are steamed and curled to produce all the resiliency of hair. The machine passes its output straight into presses, where it is bound in 100-pound bales. Some of this goes direct to the market. The rest goes to mattress machines and by a special process of steaming and curling is transformed into a fiber closely resembling the excelsior ordinarily used for packing purposes.

Cheap Electric Power at Niagara.

ACCORDING to the *Electrical Review,* Niagara Falls, N. Y., seems likely to become the greatest source of transmitted power in the world. Plants located at the falls are now delivering 120,000 horse-power at full load, but only one-fourth of this gets as far away as Buffalo, a distance of twenty miles.

Plants are now under construction that will add more than one-half million horse-power to the generating capacity there, and much of this must be transmitted to find a market. There are quite a number of large cities within a radius of 200 miles of Niagara that would be glad to buy cheap electric power or light from the falls.

Another outlet for the great power that is soon to be generated at Niagara is in long-distance transportation. Interurban street railways and their traffic in the region 100 miles east and west of Niagara Falls are rapidly expanding, and their operation promises to require thousands of additional horse-power within the next decade. Steam power for these railways cannot hope to compete with transmitted water power from Niagara, within the distance named.

Last year the number of canal boats cleared at Buffalo was 3,487, and in 1893 it was 7,725. With the completion of the barge canal, connecting Buffalo with New York, the tonnage of boats and the power required to drive them must greatly increase, and the indications are that electric motors will be called on to do the work.

Within 100 miles of the falls the water power developed there will be cheaper than any other that can be obtained for these motors. Buffalo and the railway yards that adjoin the city limits, only twenty miles from Niagara Falls, contain 450 miles of steam railway tracks, and is the center of terminus of fifteen trunk lines. Over these lines fully 250 passenger trains daily enter the city. If each of these trains travels 100 miles on each side of Buffalo, at the rate of forty miles per hour, it will be within 100 miles of Niagara Falls for approximately two hours, and there will constantly be twenty trains within that distance.

At the rate of 1,000 horse-power for the locomotive of each train, the passenger traffic within easy reach of the falls calls for 20,000 horse-power. To this figure probably as much as 10,000 horse-power should be added for the freight traffic, raising the total for steam railways to 30,000 horse-power.

Dogs Employed in American Mines.

THE fact that dogs are employed for drawing empty and loaded cars of coal in the Illinois mines is brought out in the annual report of the Bureau of Labor Statistics of that State, recently issued. James Taylor, one of the commissioners, says that thirty-one of these animals are in service in one mine. He was much interested in observing the intelligence exhibited by one of these animals. The driver with his dog was returning from the bottom of the shaft, the dog drawing an empty car; on arriving at the summit of the hill, the dog, without any instruction, jumped into the car and rode with the driver down the incline to the level below; arriving at the bottom the dog jumped out of the car and pulled it up the grade on the opposite side to the working face. Mr. Taylor further remarks:

"I am unable to classify the different kinds of dogs that are in use at these mines. I do not esteem so highly the value of dogs, in consideration of their mere usefulness to the miner or to the operator, as I do other domestic animals—the horse, pony and mule; yet the dog, to a greater degree beyond that of any other animal, has become the humble friend and companion of man, seeming actually to be delighted with the joys, or to sympathize in the sorrows, of his master."

Basket Making by Machinery.

A NEW YORK inventor has recently constructed a machine, now in practical operation, which will turn out thirty wooden strawberry boxes a minute. The company engaged in the manufacture of the machines hope to have twenty of them ready for operation next season.

The inventor two years ago devised a machine that turns out 3,600 grape baskets a day. These baskets are of a much more substantial character than those made for peaches or berries.

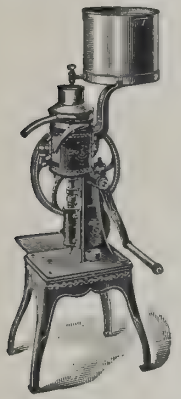
In Kentucky, where these baskets are being manufactured in large numbers, wood for their making is obtained at low cost. Gum timber is cut in the forests and floated down the rivers to the factories, where it is sawed into convenient lengths for handling. These are dropped into steaming vats where they are allowed to remain over night. The next day the logs, which average 24 to 40 inches in diameter, are placed in a veneering machine and the veneer is the same day worked up into baskets, which are then placed in the drying house to be shipped the following day.

From Cloth to Shirt in Seven Minutes.

ACCORDING to a factory inspector in one of the Western United States, for whose edification the foreman of a shirt factory started a piece of cloth on the course of manufacture, the completed shirt, ready for a customer to wear, was produced in six-and-a-half minutes.

During this time, says an exchange, seven girls contributed their efforts to the finished product. One machine in this particular factory makes 16,800 buttonholes each day, or 28 per minute. With machinery now being used one factory hand can, in a ten-hour working day, cut 3,000 shirts.

De Laval Cream Separators.



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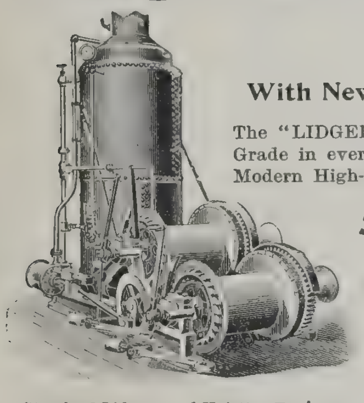

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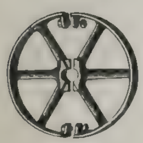

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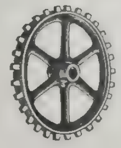

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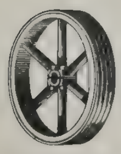

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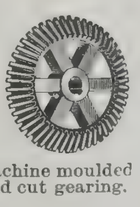

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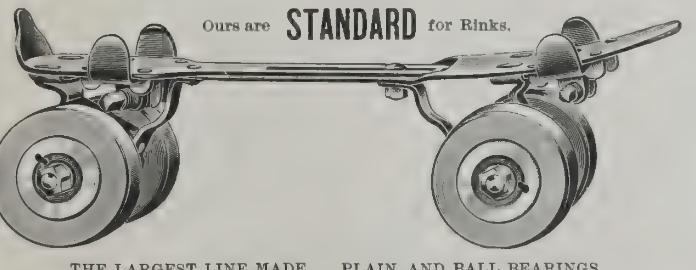

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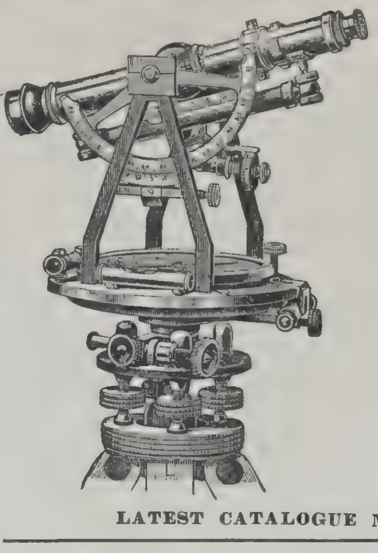

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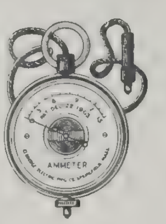

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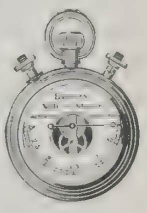

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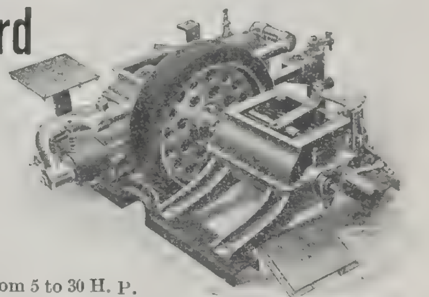

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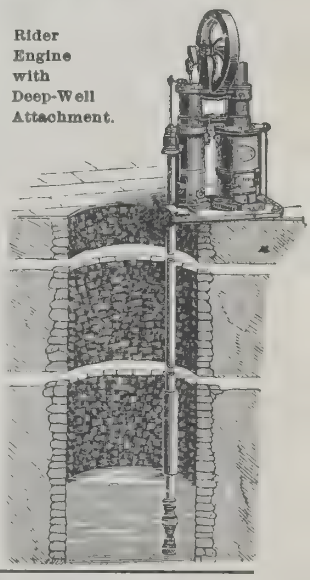

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Enormous Wealth Produced by American Farms.

THAT the Department of Agriculture, established by the United States Government, is performing a most valuable service for the farmers of the country is shown by the annual report of the Secretary which has just been published. Among the important features of the year's work enumerated were the taking of preliminary steps to conduct feeding and breeding experiments; the war waged against the cotton boll weevil and against cattle mange; plans for education of engineers in road building; the production of a hardy orange, a hybrid of the Florida orange and the Japanese trifoliata; valuable research in successful shipping of fruit abroad; the value of nitrogen-fixing bacteria; successful introduction of plants suited to light rainfall areas; establishment of pure food standards; the extension of agricultural education in primary and secondary schools; the extension of instruction to our island possessions to enable them to supply the country with $200,000,000 worth of domestic products, now imported from abroad.

The report discusses the place of agriculture in the country's industrial life. The corn crop of 1904 yields a farm value greater than ever before. The farmers could from the proceeds of this single crop pay the national debt, the interest thereon for one year, and still have enough left to pay a considerable portion of the Government's yearly expenses. The cotton crop, valued for lint and seed at $600,000,000, comes second, while hay and wheat contend for the third place. Combined, these two crops will about equal in value the corn crop.

Notwithstanding that the wheat crop shows a lower production than any year since 1900, the farm value is the highest since 1881. Potatoes and barley reached their highest production in 1904. Save in 1902 the oat crop was never so large by 60,000,000 bushels. The present crop of rice promises a yield of 900,000,000 pounds, 300,000,000 more than ever before.

Horses and mules reach the highest point this year, with an aggregate value exceeding $1,354,000,000. On the other hand, cattle, sheep and hogs all show a slight decline.

The steady advance in poultry leads to some astonishing figures. The farmers' hens now produce one and two-thirds billions of dozens of eggs, and at the high average price of the year the hens during their busy season lay enough eggs in a single month to pay the year's interest on the national debt.

After a careful estimate of the value of the products of the farm during 1904, made within the census scope, it is safe to place the amount of $4,900,000,000 after excluding the value of farm crops fed to live stock in order to avoid duplication of values. This is 9.65 per cent. above the product of 1903, and 31.28 per cent. above that of the census year 1899.

Some comparisons are necessary to the realization of such an unthinkable value, aggregating nearly $5,000,000,000. The farmers of this country have in two years produced wealth exceeding the output of all the gold mines of the entire world since Columbus discovered America. This year's product is more than six times the amount of the capital stock of all national banks, it lacks but three-fourths of a billion dollars of the value of the manufactures of 1900, less the cost of materials used; it is three times the gross earnings from the operations of the railways, and four times the value of all minerals produced in this country.

The year 1904 keeps well up to the average of exports of farm products during the five years 1899-1903, amounting to more than $859,000,000, while the average for the five years was nearly $865,000,000. During the last fifteen years the balance of trade in favor of this country, all articles considered, exceeded $4,384,000,000, but taking farm products alone these showed a balance in our favor of more than $5,300,000,000.

Reviewing the increase in farm capital, the Secretary estimates it conservatively at $2,000,000,000 within four years—this without recognizing the marked increase in the value of land during the last two years. The most startling figures shown as illustrating the farmers' prosperity are those presented by deposits in banks in typical agricultural States. The Secretary selects for this illustration Iowa, Kansas and Mississippi. Taking all kinds of banks—National, State, private and savings—the deposits increased from June 30, 1896, to October 31, 1904, in Iowa, 164 per cent.; in Kansas, 219 per cent.; in Mississippi, 301 per cent., and in the United States, 91 per cent.

Industrial Advantages of the South.

A WRITER in *Dixie*, a Southern magazine, declares that the South has the advantage of two coasts—Atlantic and Gulf. In the twenty-six foot harbor class there are nine cities. The ports have present and immediate advantages over northern seaports, in their greater accessibility for a large part of the people of this country—for at least five-sixths of the entire population of the United States; advantages in their freedom from ice, snow and sleet blockades; in easier railroad grades, and in a network of rivers, largely navigable, and capable of great improvement.

The development of the interior of the country has been remarkable. There is every reason to believe that it will increase as rapidly for the next twenty-four years as for the past twenty-four years. In cotton alone, not many years will elapse before the South will raise at least 15,000,000 bales of cotton, because the world will need it. This increase must seek the world's markets through Southern ports. The South is destined to become the great meat-raising and fattening section of the United States—the surplus of which will largely find an export throught Southern ports.

The South will soon avail itself of the vast advantages of Southern ports for West Indian, Central American and Mexican trade, over the northern ports and ultimately for the vast trade of South America. To-day Southern mills are shipping to the Far East their cotton goods, through Vancouver. The Panama Canal changes all that, and ships these goods through Southern ports in the comparatively near future, and we shall inevitably receive and distribute the imports of the wonderful East.

Railroad Locomotives Not Yet Ready for the Scrap Pile

OLD engines will not be sent to the scrap pile for some time to come, even though the experiments recently made testing the practicability of electricity to replace steam, developed the fact that there is a possibility in the near future that such will be the case, the experiments having proved most successful. What a change will mean to the leading railroads of the United States can be judged from the fact that at the average price of $14,000, the locomotives owned by fourteen railroad companies represent an outlay of $297,000,000. Improvements that are expected to show 10 per cent. on the money invested either in additional earnings or in a saving of operating expenses are usually recommended by railway officials. A case in point is the $8,300,000 bond issue recently sold by the Central Pacific to reimburse the company for money spent for the Salt Lake cutoff to save a haul of only forty-three miles over the Rocky Mountains. If operating expenses can be reduced by using electricity as a motive power, what will become of the steam locomotives now in use?

Wood Paved Streets.—New York is again coquetting with wood paving, and Cortlandt street, a busy downtown thoroughfare, is being experimented upon. The old pavement has been entirely removed and a foundation of concrete has been laid. Upon this concrete blocks of yellow pine, treated with creosote, are placed. The manner of laying the blocks is as follows: First, one group of laborers spread a bed of fine building sand about an inch deep upon the concrete. Then come the pavers who lay the blocks in even lines with narrow spaces between each one. When the blocks, which are a trifle smaller than ordinary building bricks, are required to be cut, an ordinary ax is used. After the pavers come a force of men who level the blocks with pounders. After the blocks are all laid and leveled soft Portland cement is forced into the interstices to make a water-tight surface.

Trade Conditions in the United States.—Conditions of trade in the United States since the Presidential election have greatly improved. Manufacturers all over the country report that the business outlook for the coming year is excellent. The unprecedented crops of corn, cotton, barley, potatoes and other farm products, all of which have brought good prices, have placed more money in the pockets of the farmers than they have ever received in a single year before. Hence they are in a position to buy agricultural implements and machinery, furniture, housefurnishings and even luxuries the coming season. There is a feeling of buoyancy and hope prevailing in nearly every kind of business. Thus far no tendency to over-speculation has manifested itself and it is to be hoped that none will appear. With conservatism governing those engaged in producing goods, and the merchants in marketing them, the coming year ought to be one of great prosperity all along the line.

Imitation Jewelry.—The shops devoted to the sale of imitation jewelry in New York rival in display the establishments dealing in genuine gems. The good workmanship and the clever imitation shown in the imported designs and the new art ornaments that are at present such a rage abroad seem to indicate that within a few years it need be little more than a matter of pride whether one possesses real gems or imitation. Not only pearls and diamonds, but emeralds, rubies and sapphires are now duplicated in old cuttings and quaint settings of fine gold that, when worn, will deceive even an expert.

Chicago's Great Meat Industry.—Of all the countries of the world the United States stands at the head in the production of meat. The center of this industry is at Chicago, where in 1903 over 300,000 carloads of live stock, valued at $300,000,000, were slaughtered at the Union Stock Yards. This is 50 per cent. of the total receipts at all stock centers in the country. Over $40,000,000 was paid in wages to the 50,000 men employed in the yards. The combined investment of the 100 firms doing business within the yards is over $100,000,000.

American Rugs Bought for Turkey.—A Hightstown (N. J.) rug company has recently executed an order for 1,000 rugs for export to Turkey. The order was given by a Turk who submitted a sketch of the pattern he desired to have used in their manufacture. The company made a design from the sketch and the rugs were manufactured in accordance with it.

World's Costliest Railroad.—Railroads have been built in some parts of the United States for as little as $15,000 per mile. The expense of constructing the New York underground railroad which, when completed, will be twenty-one miles in length, will be $40,000,000, or about $2,000,000 per mile.

Pocket Roulette Wheel.—A pocket roulette wheel, in the form and size of an every-day watch, has been placed upon the market. It is furnished in various forms of dials, so that any desired percentage of chances can be given.

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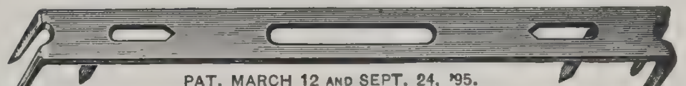
Made in four widths, viz.: ½, ⅝, ¾ and 1 inch.



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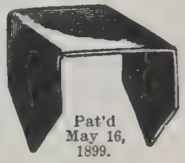

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And the official records show that in the Model Diary at the Pan-American **Its Work Excelled Everything,** averaging .0138 for 50 consecutive runs, and won **World's Record** for practical every-day work.

The United States Separator stands without a peer, the most thorough Separator made.

Dairy size U. S. Separators run easily by hand, but can be operated by power if desired. Capacities range from 150 to 700 lbs. an hour.

Prices from

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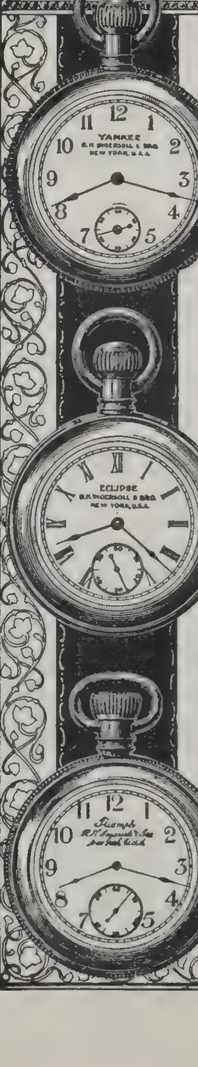

THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of timepieces. The output is five thousand watches per day, which go to all parts of the world.

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Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 1¼ cu. ft.

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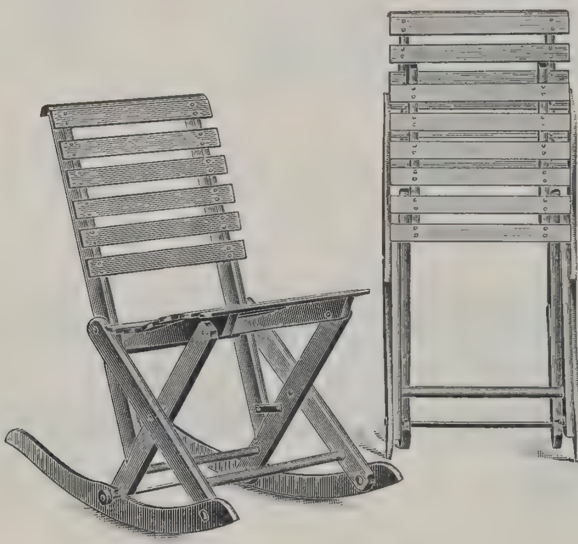
For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats No tools required in setting up. We guarantee the New Michael Four Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen **$30.50**



Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs

Price, per dozen **$9.00**

Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

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For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals:

Gold, Silver and Bronze.

Excels on Every Point.

Cheapest to Use in the End.

TESTIMONIAL.

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Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

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RACING COMPOUND for Wooden Yachts' Bottoms, Bright and Smooth.

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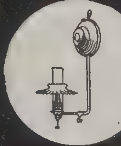

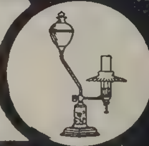

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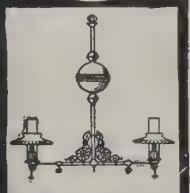

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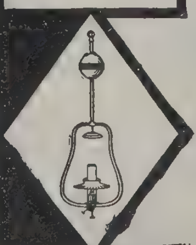

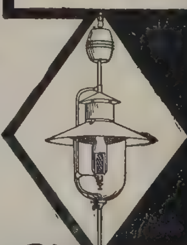

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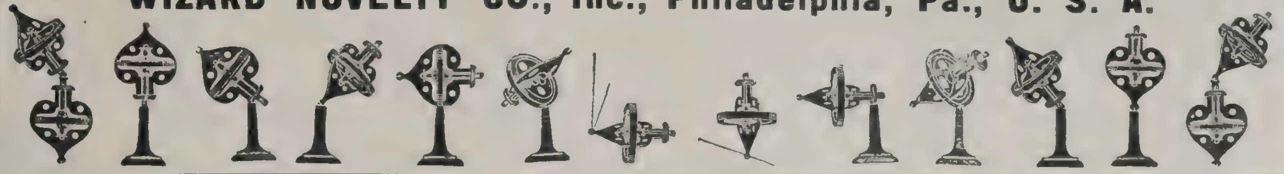

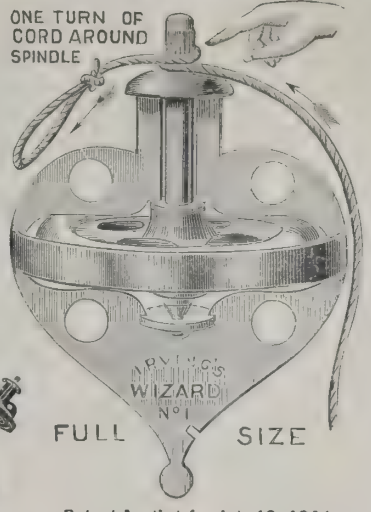
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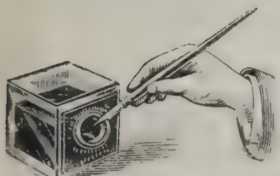

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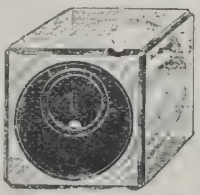

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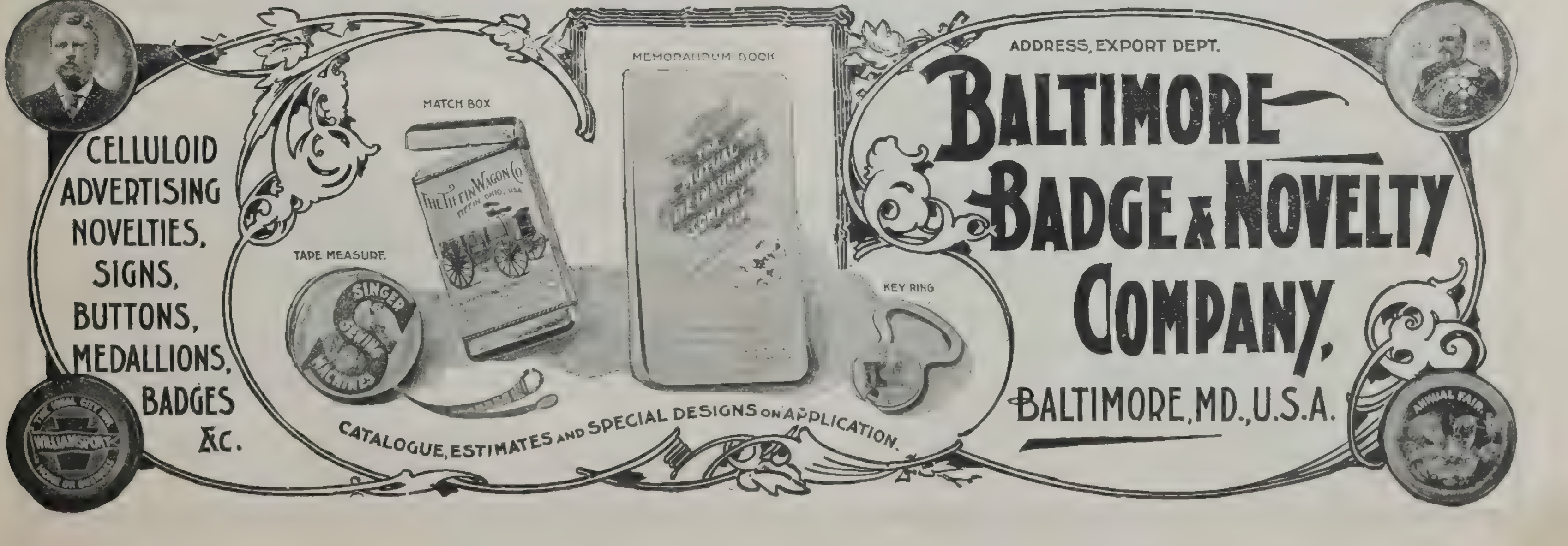

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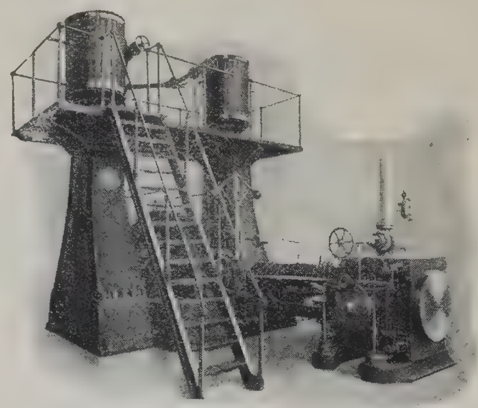

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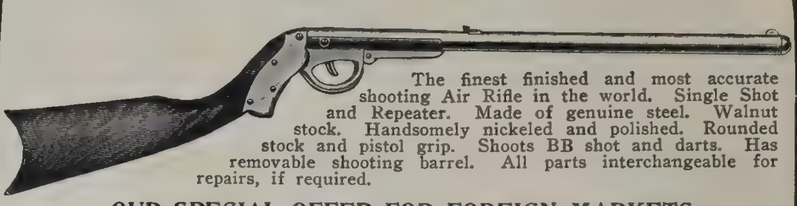

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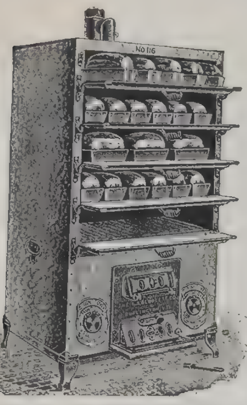

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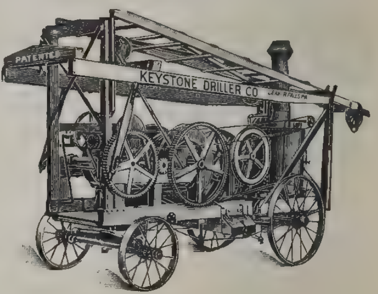

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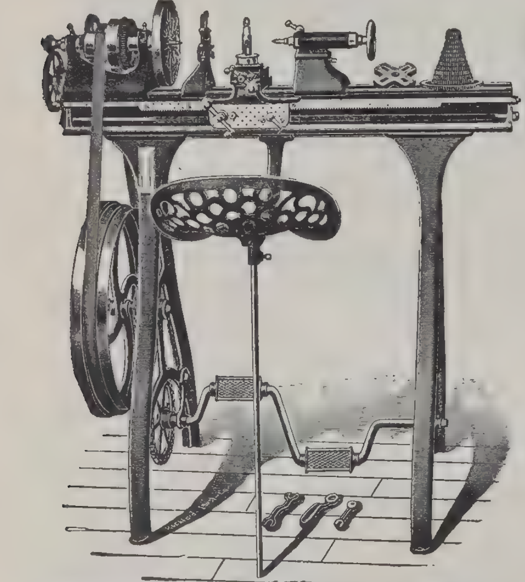

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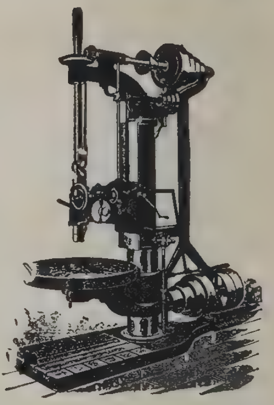

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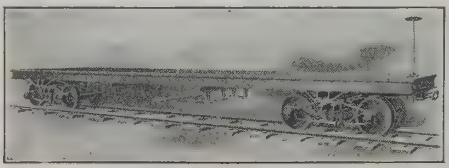

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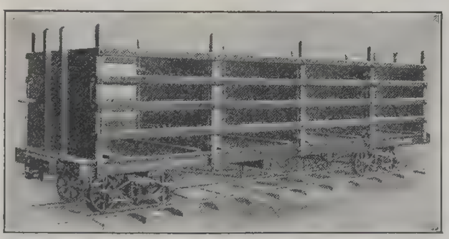

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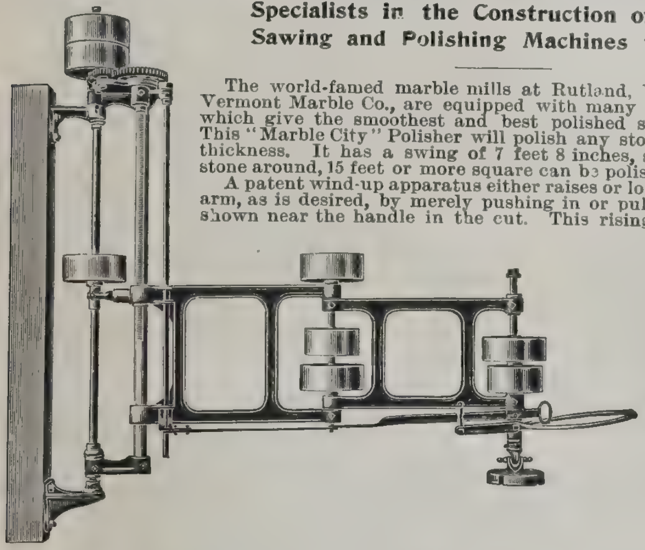

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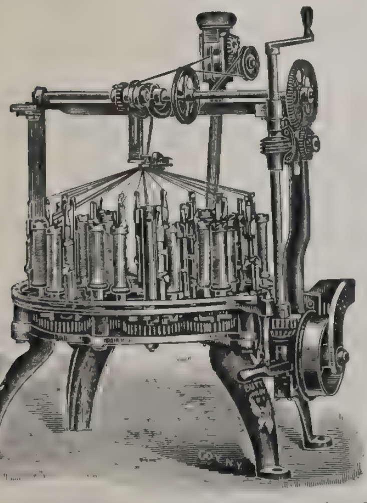

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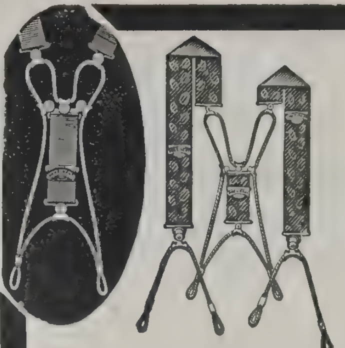

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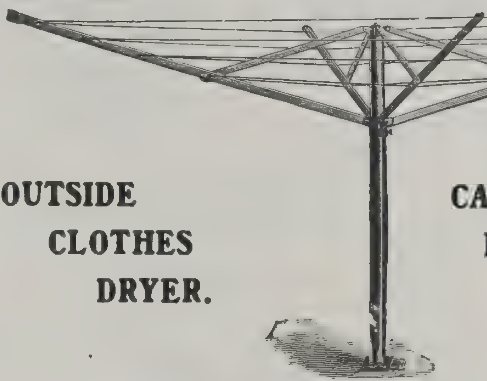

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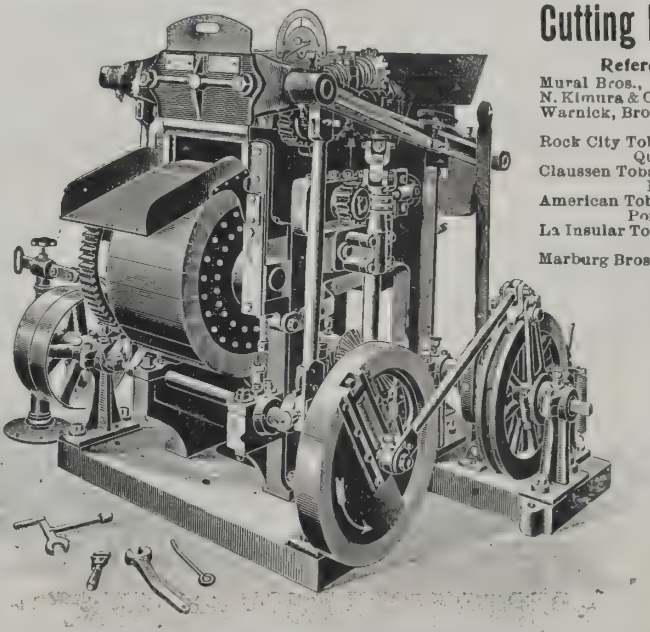

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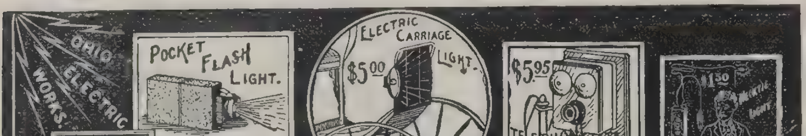

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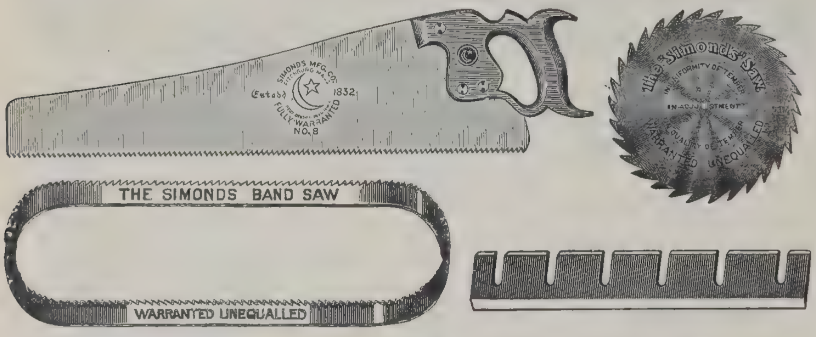

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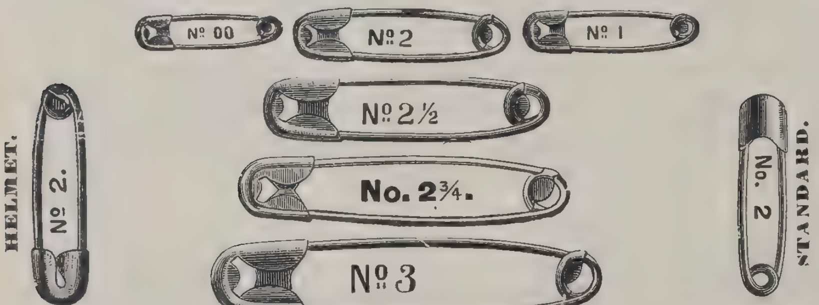

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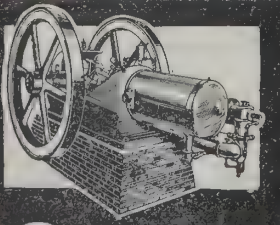

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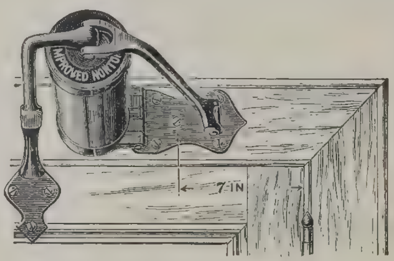

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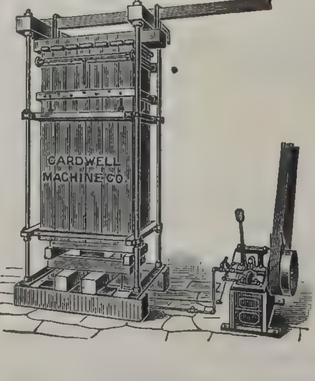

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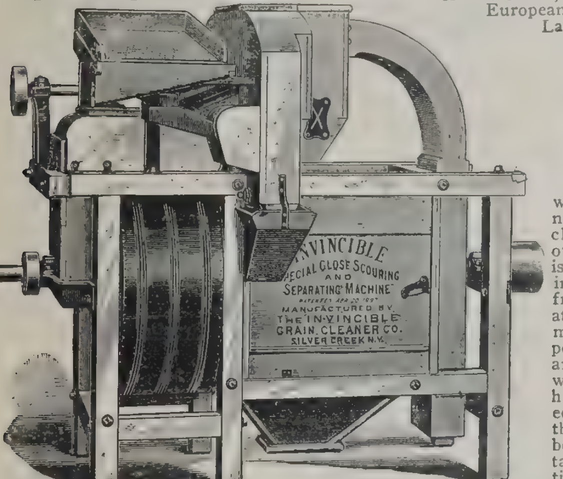
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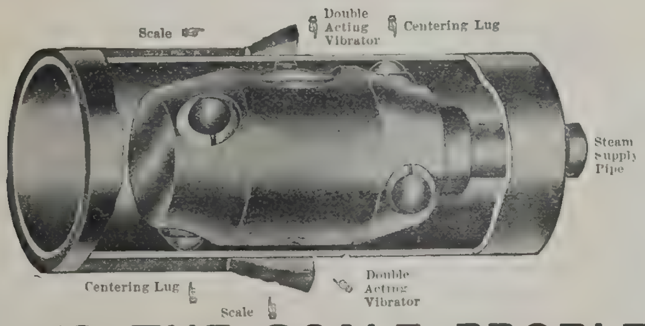

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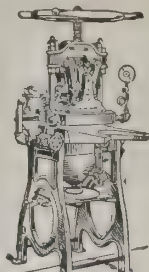

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OKOLITE,

An Oily Paste Polish for ALL Black Leathers, Also

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For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

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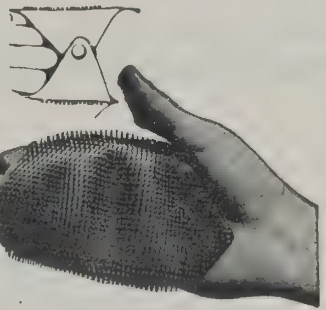

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If applied properly will remove

**BLOTCHES,
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Orders filled through commission houses. Orders solicited from responsible wholesale drug houses, who can buy them in quantities.

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A PAINT THAT PROTECTS.

LEADS THEM ALL,

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We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

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New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

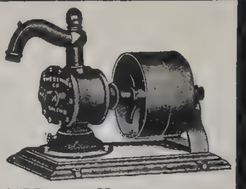
HARRY LOUDERBOUGH, Proprietor,
JERSEY CITY, N. J. U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint,** manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

DEMING PUMPS,



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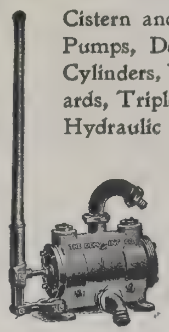
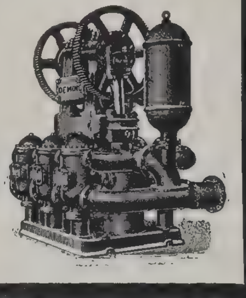
Known everywhere as "THE WORLD'S BEST."



Cistern and Pitcher Spout Pumps, Hand and House Force Pumps, Deep Well Pumps and Standards, Iron and Brass Cylinders, Windmill 3-Way Pumps and Standards, Triplex Power Pumps, Rotary Pumps, Hydraulic Rams, Irrigating Pumps and Cylinders, Spray Pumps, etc., etc.



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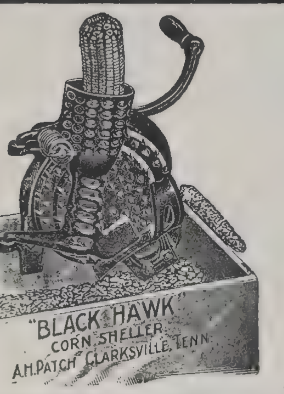
Orders executed through New York export merchants.



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"Black Hawk"

Corn Sheller and Separator.

14th Year of Success.

BEST Hand Sheller ever made. Original, Honest, Durable. Shells rapidly; takes every grain off the cob. Easy to use and always ready.

WILL LAST A LIFETIME.

Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of **Malleable Iron.** All bearings chilled. Attached to any box **Instantly by Clamps.**

SPECIAL EXPORT PACKAGES. Order direct or through any reliable Export Commission House.

Beware of Imitations. Insist on having Patch's Patent "Black Hawk" Corn Sheller. All others are **Frauds.**

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The Best=Selling Shoe Polish

IN AMERICA.

FOR LADIES, MEN AND CHILDRENS SHOES AND ALL BLACK LEATHER ARTICLES
THE MODERN SHOE POLISH
TRADE
BLACKOLA
MARK
PRODUCES A PATENT LEATHER FINISH
GUARANTEED NOT TO INJURE THE LEATHER
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KEY
BLACKOLA PREVENTS THE LEATHER FROM CRACKING
REQUIRES NO MOISTENING

TO OPEN THE BOX
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EVERY BOX HAS OUR OPENING KEY ATTACHED TO REMOVE THE COVER.

BLACKOLA is different from every other shoe polish in quality and convenience.

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Dealers are requested to write for sample.

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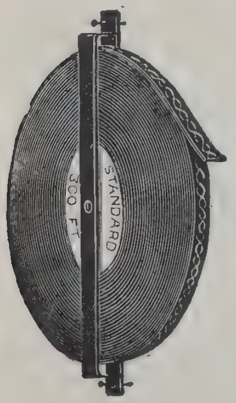

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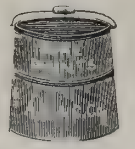

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An Invalid's Stand, Easel, Reading Stand, Book Rest, Music Stand, Card Stand, Sewing Stand Drawing Board, all in one handsome piece of furniture. The top can be raised or lowered, and revolves around the pedestal; automatic adjustments for tilting the top at any angle; folds compact for export.

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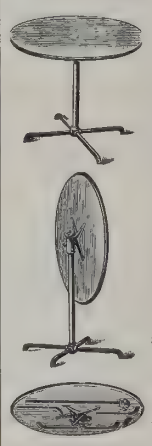

A first-class table, strong in construction, yet very light in weight. A handy table for the home, office, restaurant and summer garden. A half turn of the top places it in a vertical position, therefore occupying little space when set aside. It packs in the smallest space of any table yet designed and is specially constructed for export. The top is 30 inches in diameter: made of 5-ply veneer quartered oak.

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RAISED OF LOWERED any height.
REVOLVES and TILTS either way.
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It makes a nice reflector and dressing stand for the ladies

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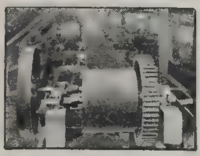
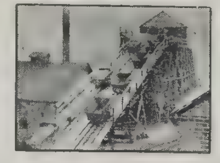

Rubber Belt Conveyor.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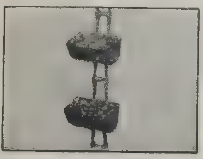
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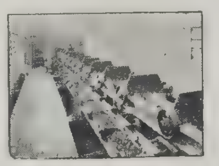
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The JEFFREY MFG. CO.
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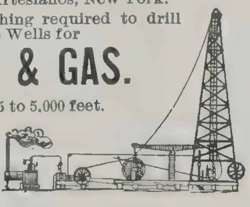
Any depth from 25 to 5,000 feet.

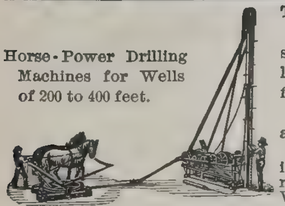

Machine for 2,000 to 4,000 ft.

Also Special Tools for Soundings and Test Borings for **Water** and **Mineral Prospecting and Developing Mines**; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing Tools, Boilers, Engines, Etc.

Complete Machines and Experienced Men sent to any Country or Clime. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

When writing, always state fully what is desired, giving greatest depth of borings required, if in Earth or Rock, and if for Water, Oil, Gas or Minerals.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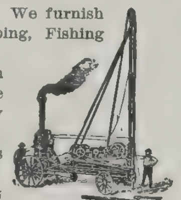
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HIGH-GRADE FIRE APPARATUSES.

FIRE EXTINGUISHERS,
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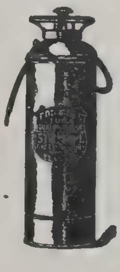
For Storehouses, Homes, Factories, Establishments or Fire Departments.



Please pay us a visit when you come to the Exposition in 1904.

When the apparatus is loaded it will throw a stream of gas (which gas is the best fire extinguisher) at the distance of 50 feet. Any woman or child can operate it as well as an expert man. It is always charged and ready for use, but it has no pressure until the moment of using. It can be used every day, lasting a lifetime Once discharged or used it can be charged again in one minute.

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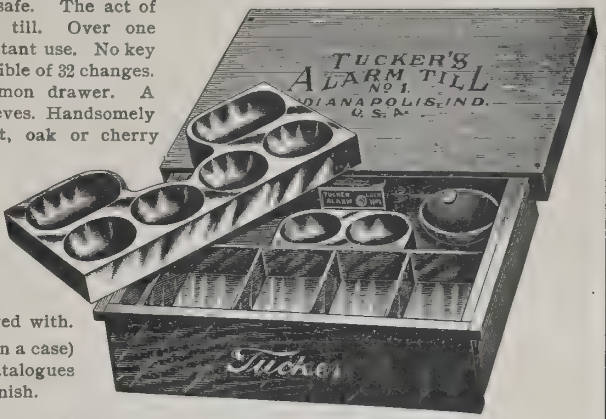
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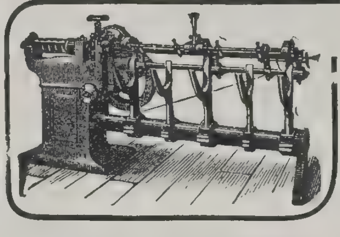

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AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

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LIBERAL DISCOUNTS TO TRADE.

Net Weight 3¼ pounds.

The S. & P. Pinking Machine

IMPROVED MODEL NOW READY.

Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

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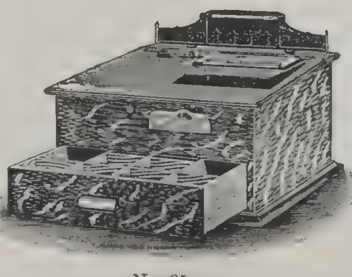
No. 85.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

Write for Circular and Prices to

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INDIAN ORCHARD, MASS., U. S. A.

J. C. F. PHINNEY,

Orders filled through commission houses.
Correspondence solicited.

CUT SOLES,

LYNN,
MASS.,
U. S. A.

BARNEY COMPOUND VENTILATING WHEEL.

For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in
France, Canada, Mexico.

FOREIGN AGENTS:
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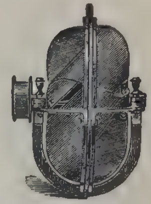
Gothenburg Machine Co., Limited, Goteborg, Sweden.

BARNEY VENTILATING FAN WORKS, Dept. E, = Boston, U. S. A.



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SPECIAL OFFER ON TRIAL ORDER FOR EXPORT.

One each 4 Burner and Oven, and 2 Burner and Oven Acetylene Ranges. One each 1, 2 and 3 Burner Acetylene Hot Plates. One 4-Tube Acetylene Radiator. One Acetylene Mantle Burner, complete.

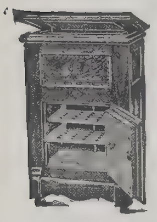
All the above sent carefully crated and boxed upon receipt of $50.00, current United States funds. Catalogue "C" on application.

Cable Address: "SATWEL," Cleveland.
Western Union and Postal Codes.

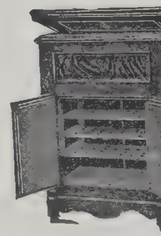
THE NATIONAL LIGHTING AND HEATING CO., Cleveland, Ohio, U. S. A.

The Leonard Cleanable Refrigerators

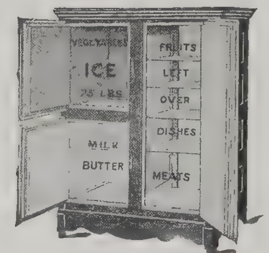
Freely Acknowledged to Be the Best in the World.
Made in Grand Rapids, Mich., U. S. A.



No. 498. No. 070.



No. 73.



No. 4. No. 6.

Single door, zinc lined.
No. 498—Size, 23x15x37 ......$4.50
No. 070—Size, 25x17x40....... 7.70

Double door, zinc lined.
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Three doors, lined with real Porcelain on sheet steel.
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Four doors, lined with real Porcelain.
No. 6—Size, 42x23x54 ......$33.95

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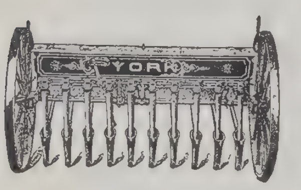
Seven walls to save the ice. Air tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawed oak panels, dark golden finish. Walls packed with mineral wool.

These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Michigan, U. S. A.



Office:
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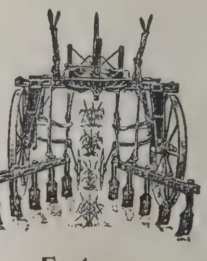
NEW YORK.



Factory:
YORK, - PENNA.

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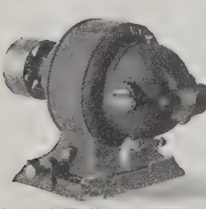
SPECIAL OFFERS FOR EXPORT ONLY.



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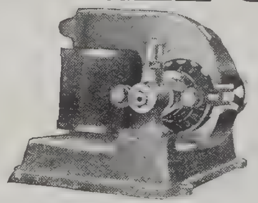
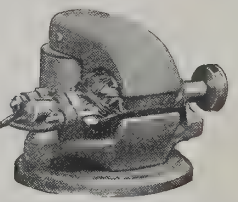
Price, each, - $15.50



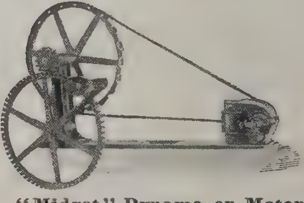
Type "B," Dynamo or Motor.
Price, each, - $26.50

The prices here quoted are packed, ready for shipment abroad, and delivered f. o. b. New York, Boston or Philadelphia.

☞ Our Bulletins, illustrating and describing the various styles of **Electrical Experimental Apparatus** made by us, mailed postpaid.

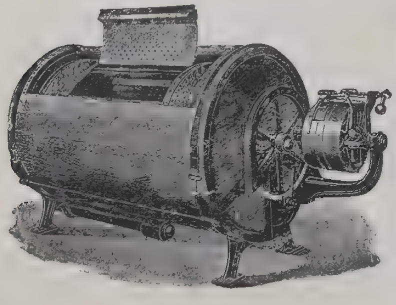


"Midget" Dynamo or Motor.
Price, 6, - - $18.00



"Midget" Dynamo or Motor, with hand power.
Price, 6, - - $34.50

THE ELBRIDGE ELECTRICAL MFG. CO., Elbridge, New York, U. S. A.



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Manhattan Laundry Machinery Co.,

Manufacturers of the Highest-Grade

LAUNDRY MACHINERY AND APPLIANCES.

COMPLETE OUTFITS for Steam Laundries, either custom or new work, also for Laundries in Hospitals, Institutions and Hotels.

The largest and most successful laundry plants throughout the world have been installed by us. Write for new Catalogue and Export Price Lists.

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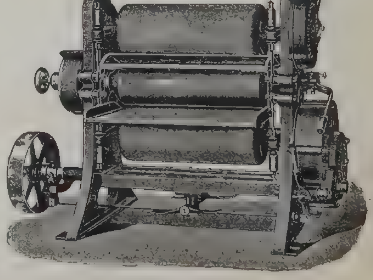
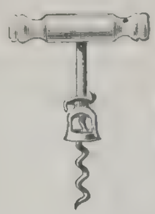


Collar and Cuff Ironer.

No. 53.

Williamson's Hand-Power Cork Screws



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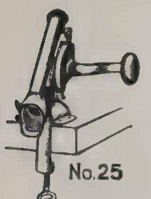
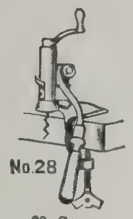
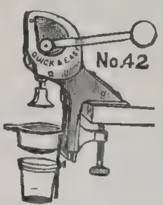
TRADE WILLIAMSON'S CORK SCREW MARK.



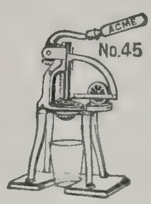
35. Quick and Easy. Cork Puller.



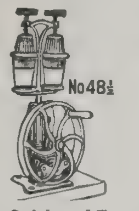
28. Samson Cork Puller.



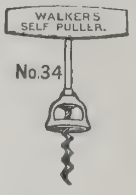
42. Quick and Easy Lemon Squeezer.



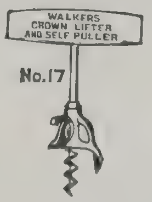
45. Acme Lemon Squeezer.



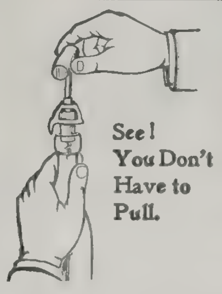
48½. Quick and Easy Shaker.



34. Self-Pulling Cork Screw.


WALKERS CROWN LIFTER AND SELF PULLER
No.17

17. Self-Pulling Cork Screw.


See! You Don't Have to Pull.

48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

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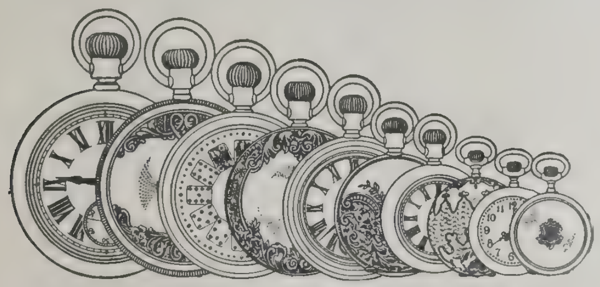
Orpers Filled Through Commission Houses. **Correspondence Solicited.** **Catalogue B on Application.**



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have a world=wide reputation and are made to suit all sorts and conditions of people.

Export Catalogue in English, French or Spanish sent on application.

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AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

Price, with dates and printing die, as illustrated, or with any other wording that may be desired, **$3.50.**

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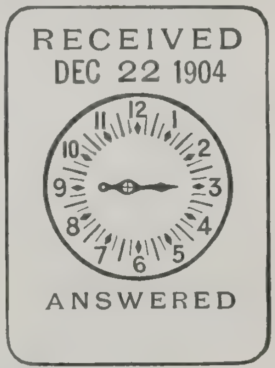
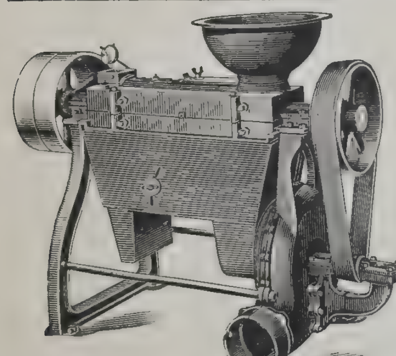
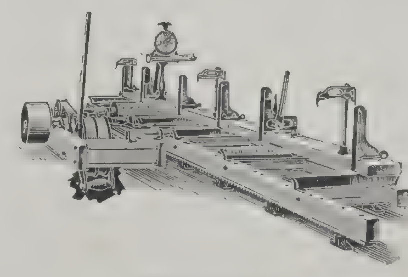
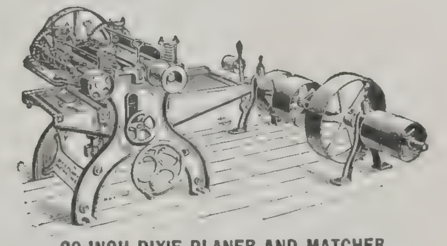




U. S. COFFEE HULLER.



CIRCULAR SAW MILL.



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For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

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ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM

SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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CORRESPONDENCE SOLICITED.

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Manufacturers and Exporters of FINE **LASTS** IN ALL SHAPES AND STYLES,

FOR MEN, WOMEN, YOUNG MEN AND MISSES.

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Air Beds,
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Bandages,
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Bed Pans,
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Dental Dam,
Dilators,
Face Bottles,
Finger Cots,
Gas Bags,
Gloves,
Ice Bags,
Ice Caps,
Medicine Droppers,
Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,
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Pessaries,
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Plaster Bowls,
Politzer Bags,
Rectal Tubes,
Rubber Bands,
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And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

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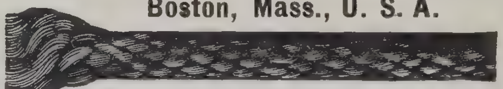
ARC LIGHT and TROLLEY CORD.



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Church, Chamber and Concert Pipe Organ Reeds

A SPECIALTY.

Workmanship and Tone Quality Unexcelled.

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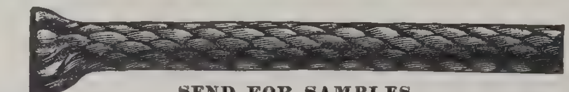

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ESTABLISHED 1895.

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IN BULK, FIVE-POUND BOXES, AND IN FANCY PACKAGES.

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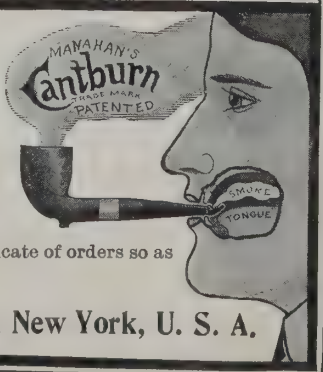
The "PIPE OF PEACE."

Can't burn the tongue. Always sweet, dry and clean.

Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes. RELIABLE AGENCIES WANTED.



The Practical Mfg. Co., 1907 Park Avenue, New York, U. S. A.

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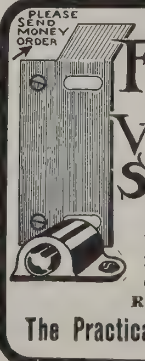

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Lets fresh air in and keeps burglars out. Automatically locks the window. Any one can attach it. You need it on every window. Your children can't fall out if you use it.

Reliable Agencies Wanted.

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MANUFACTURERS AND EXPORTERS OF

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Most dainty eating confection in the world. Crisp and delicious.

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Manufacturers of

RICH CUT GLASS

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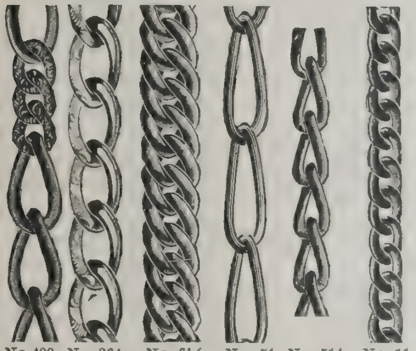

No.400. No. 264. No 6¼. No. 51. No 514. No. 11.

Fine rolled plate, warranted 6 years.

HENRY WILLIAMS & SON,

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Manufacturers and Exporters of

Fine Rolled-Plate and Seamless Wire Chains, Neck Chains, Bracelets and Lorgnette Chains.

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No. 400..	$10.00	a doz. net., f. o. b. New York
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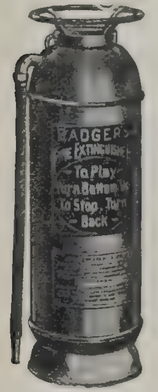
No. 6¼	9.00	" " "
No. 51..	7.00	" " "
No. 514..	7.25	" " "
No. 11..	8.50	" " "



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Badger's Fire Extinguishers

In Use All Over the World.

For full particulars apply to

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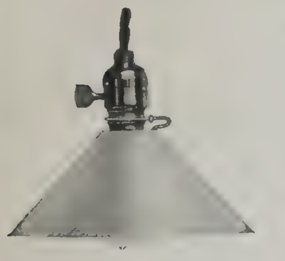
"FOR THOSE WHO WANT THE BEST."



Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

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TO INTRODUCE ABROAD:

Upon receipt of **$40.00** in U. S. gold or its equivalent, we will box and deliver f. o. b. cars at New York, five gross of these shades in assorted sizes.

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WORCESTER, MASS., U. S. A.

MANUFACTURERS OF

Emery and Corundum Wheels,

AND ALL KINDS OF

**Emery Wheel Machinery, Emery, Corundum, Etc.
Thin Elastic Wheels a Specialty.**

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Cable Address: "Computico, N. Y."

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Discounts on Application Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING ❧ CHECK AND STRIP PRINTING ❧

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil.); 6.1 cu ft. (172 cu. met.). Order direct or through any reliable exporter.

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**Discount, 30 Per Cent. in Lots of 1 Doz.
(Six Wheels) Numbers from 1 to 1,000,000**

This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.
No rubber used in the construction, and every machine is sold with our guarantee.
Style of imprint:—

123456

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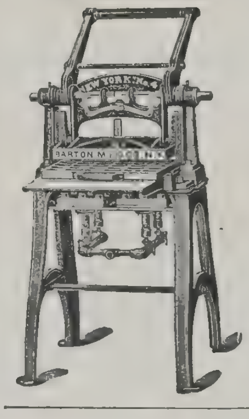
240-242 West 23d Street, New York**



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With each outfit are sent complete instructions for operating.
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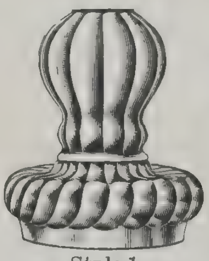

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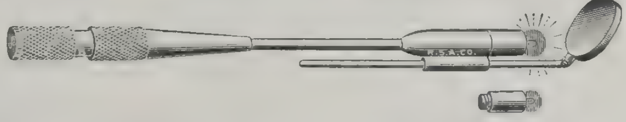

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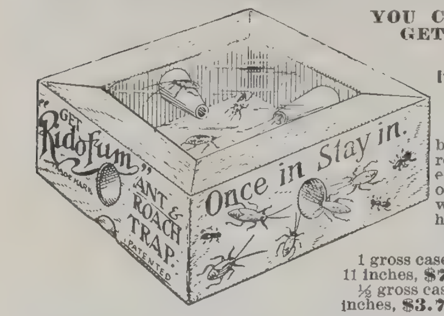

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A Sanitary Method of Destroying.
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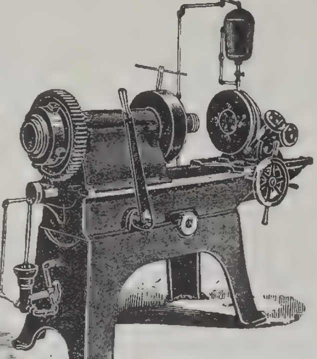

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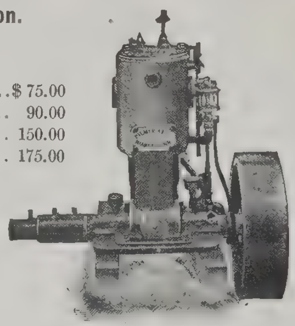

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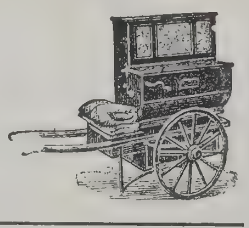

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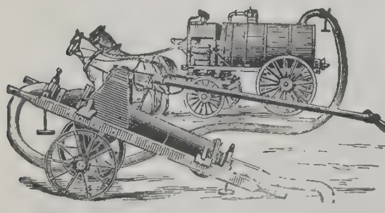

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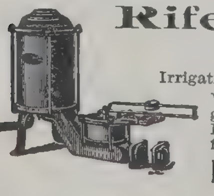

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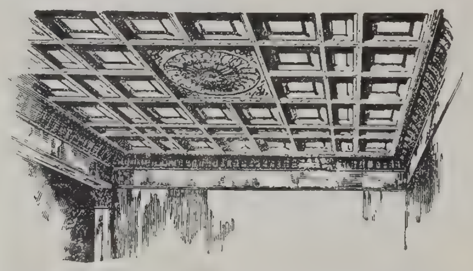

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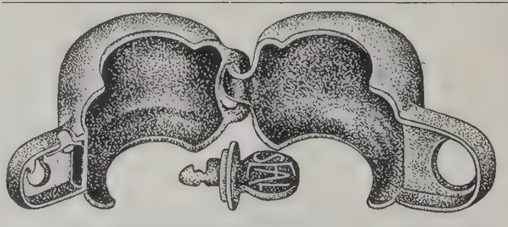

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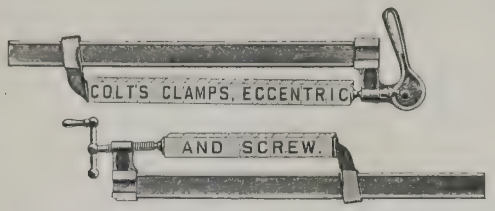

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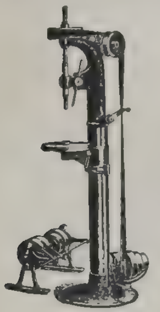

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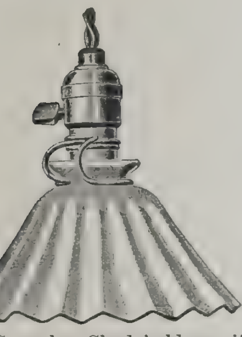

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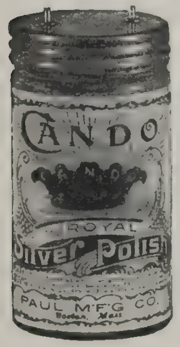

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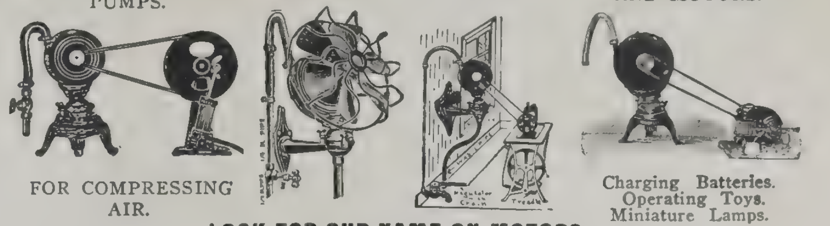

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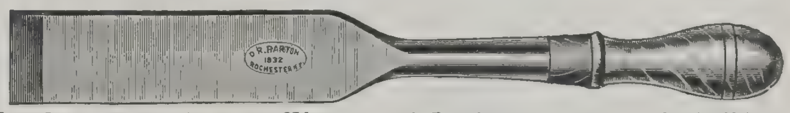

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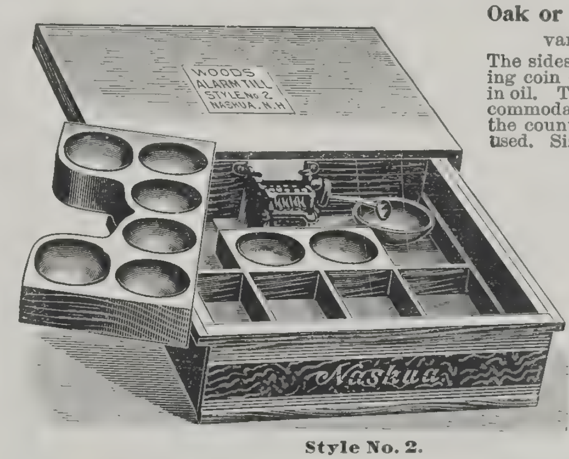
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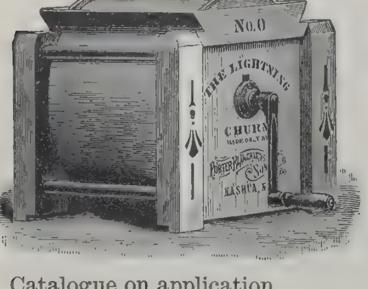

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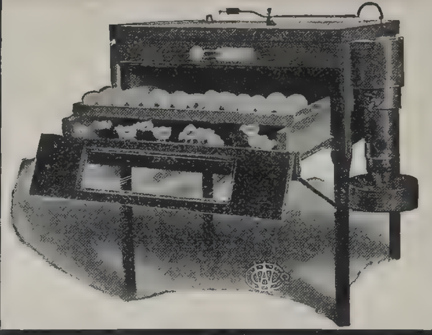

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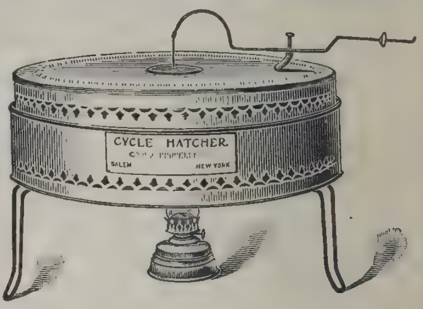

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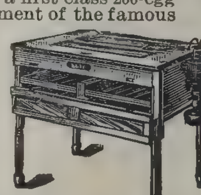

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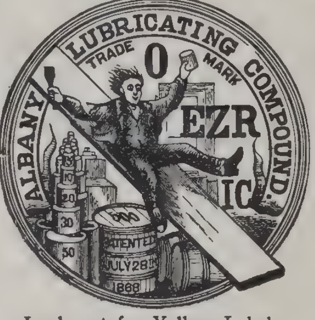

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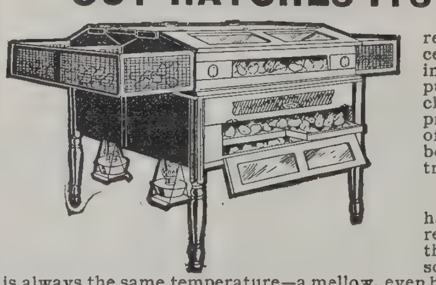

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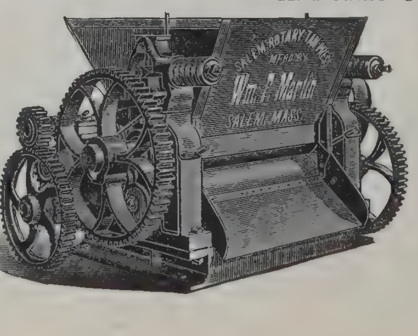

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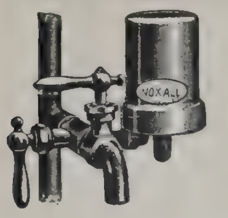

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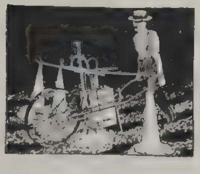

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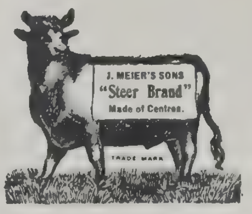

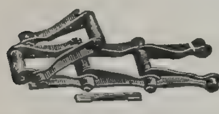

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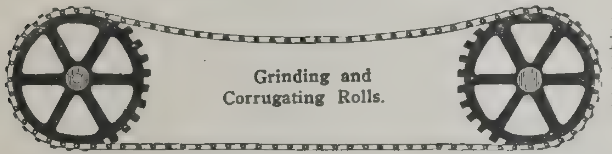
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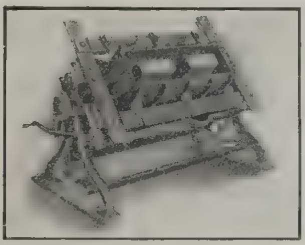

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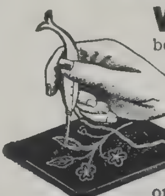

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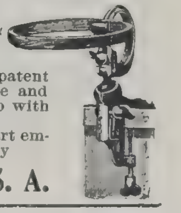

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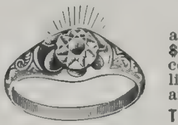

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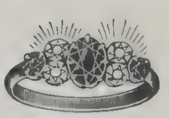

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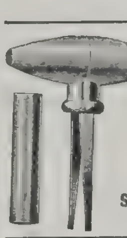

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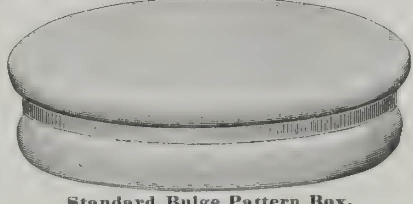

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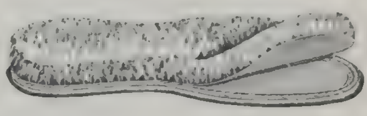

Ladies in the United States buy the wool soles, crochet and sew the upper onto the sole, thereby making their own slippers for house wear. Invaluable for invalids. Orders filled through commission houses. Correspondence solicited.

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THE JOHN C. COCHRAN CO.

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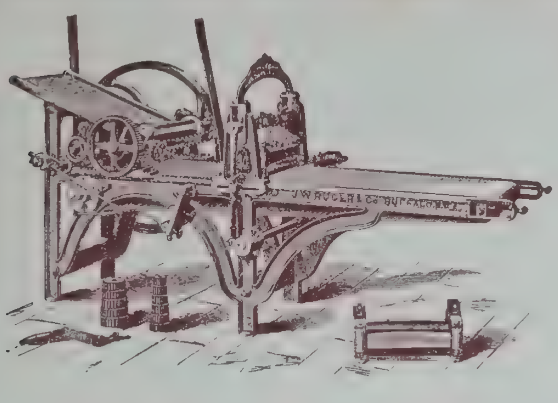

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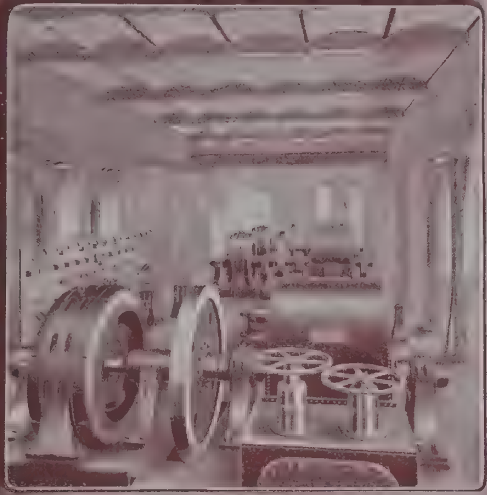

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Little's famous brands, "Cobweb" and "Satin Finish," are known and used all over the world.

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Most other Carbon Papers look alike. **Little's looks different.** It is different, being made differently by a special process, and it does different work. Send for Catalogue.

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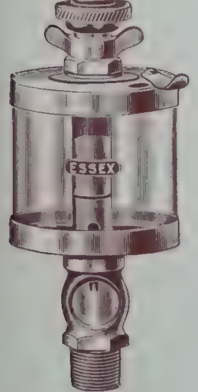
ESSEX'S STANDARD STEAM-ENGINE LUBRICATORS.



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"Simplicity is the Essence of Durability and Economy."

Such are the ESSEX LUBRICATORS, having few parts (none complicated), made by skilled mechanics, of the best material obtainable; and **each lubricator thoroughly tested before leaving our factory.**

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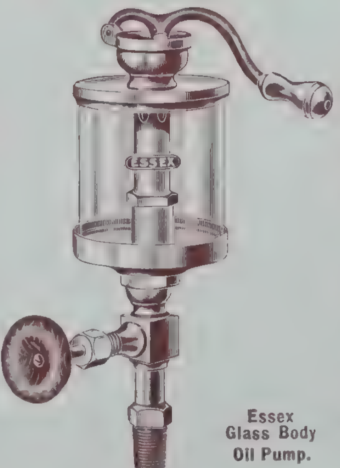
☞ Ninety per cent. of automobile makers in the United States of America use exclusively the Essex Automobile Lubricators.



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SIGHT-FEED LUBRICATORS, OIL CUPS, OIL PUMPS, OILING DEVICES, GREASE CUPS.

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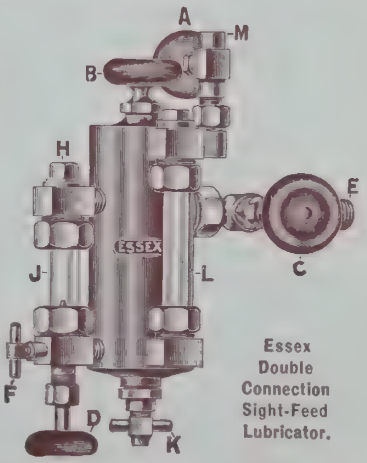

Essex Double Connection Sight-Feed Lubricator.

THE G. B. ESSEX BRASS CO. Manufacturer, **DETROIT, MICH., U. S. A.**

We Make the Largest Line of SAW MILL MACHINERY in the World.

The Greatest Lumber Maker Is the Circular Mill.

THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

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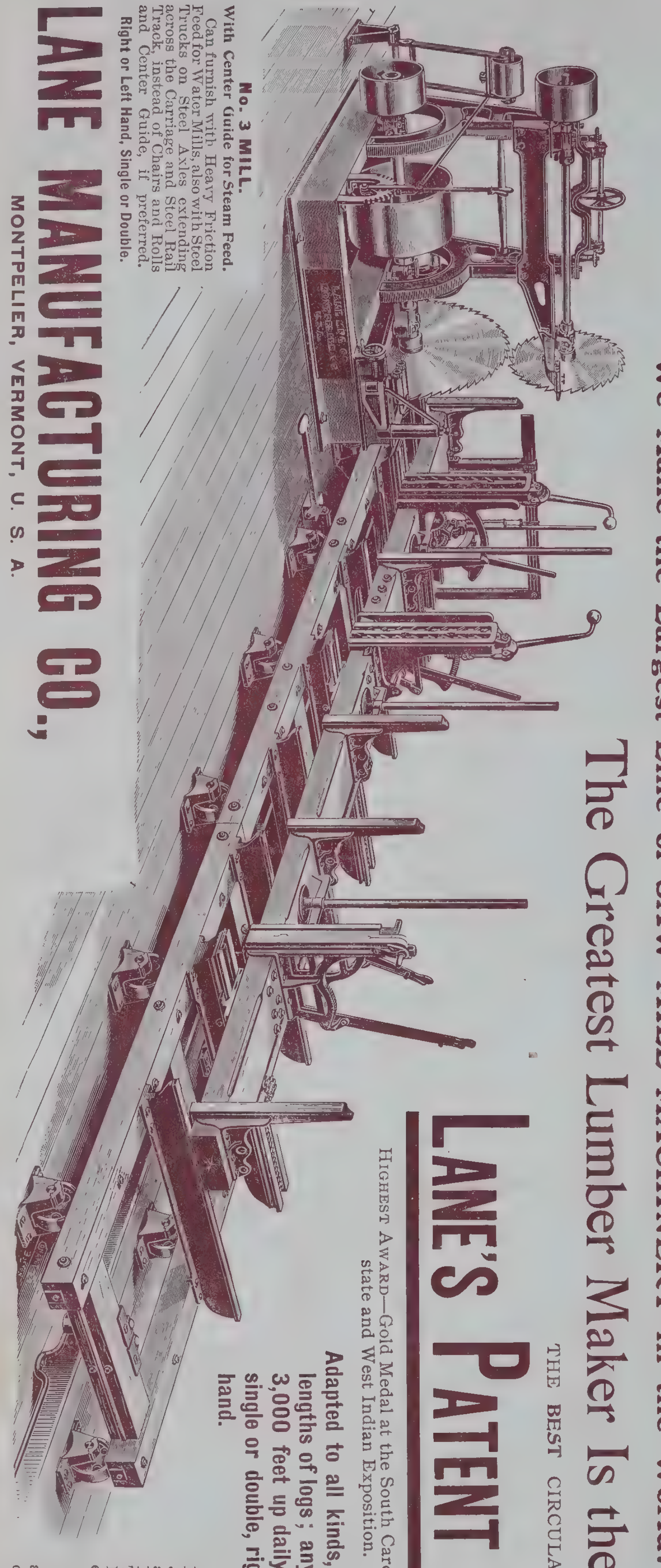

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With Center Guide for Steam Feed.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axles extending across the Carriage and Steel Rail Track, instead of Chairs and Rolls and Center Guide, if preferred.
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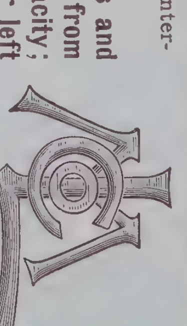

We also manufacture Saw-Mill Set Works, Dogging Devices, Etc., Water Wheels, Log Jackers, Canters and Niggers, Drag, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Edgers, Trimmers, Cutting-Off Tables, Lath, Shingle and Clapboard Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Cranes.

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The "New American"
IS THE
Turbine for Export.

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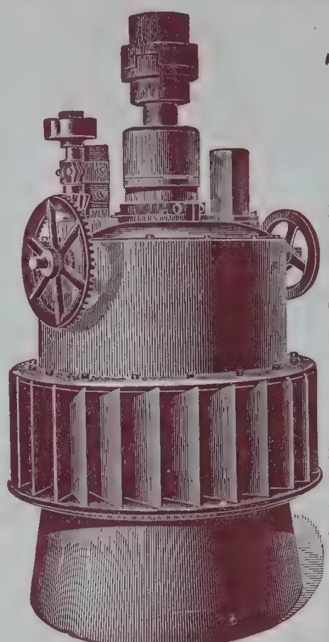

Strength, durability and interchangeable parts reduce repairs to a minimum.
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Vertical or Horizontal Installations to meet requirements.

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NATIONAL SUPPLY CO

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MANUFACTURERS OF

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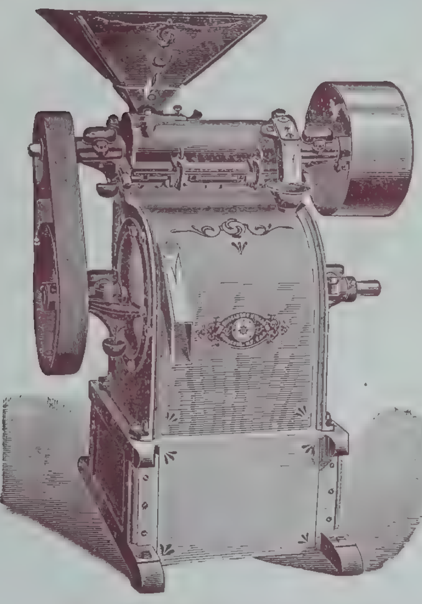
The American Exporter

WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LV. NEW YORK, JANUARY, 1905. No. 2.

Rice and Coffee Hulling Machinery



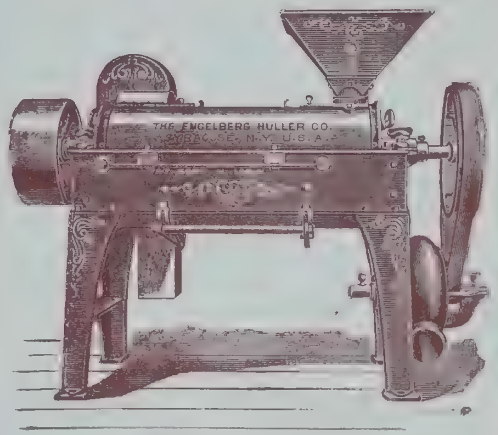
Improved Rice Huller and Polisher.

OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.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SYRACUSE, N.Y., U.S.A.

Latest Engelberg Coffee Huller.

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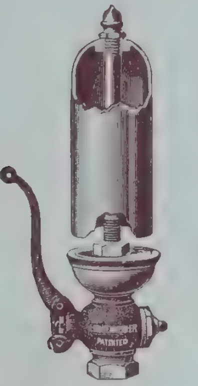
Export Office: 333 Produce Exchange, New York City.

Lunkenheimer Steam Whistles

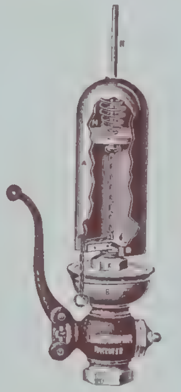


PLAIN WHISTLE.
Made in standard sizes.
1 to 10 inches diameter of bell.

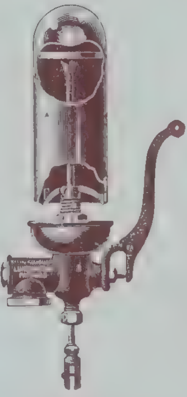
SINGLE-BELL CHIME WHISTLE.
Made in standard sizes.
1½ to 10 inches.

Are warranted to blow and satisfy the most exacting. All goods rigidly tested and inspected before shipment. Specify Lunkenheimer make and order from any leading export house.

Write for Catalog of Superior Brass and Iron Valves, Injectors, Cocks, Water Gauges, Lubricators, Oil Pumps, Oil and Grease Cups, Etc.



MOCKING-BIRD VARIABLE SOUND WHISTLE.
2½ to 6 inches.



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2½ to 8 inches.

THE LUNKENHEIMER CO. Sole Makers. Cincinnati. Ohio. U. S. A.

BRANCHES: New York, 26 Cortlandt St.; Philadelphia, 1428-32 Callowhill St.; New Orleans, Tulane-Newcomb Bldg.
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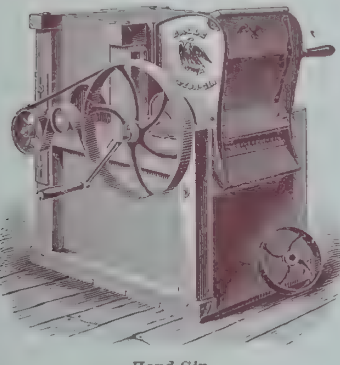

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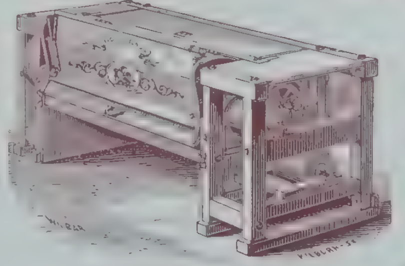
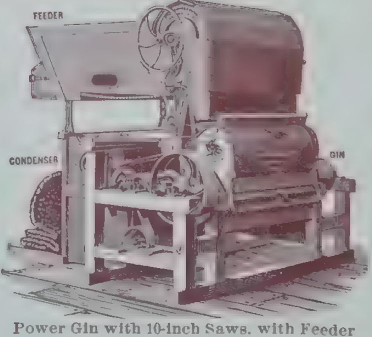
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws. with Feeder and Condenser.

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Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

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There has been a demand for a small size Tin Tubular Lantern at a low price. We offer the Little Star to fill this demand. It is similar to our Victor Lantern in appearance and possesses the same sterling qualities of the lantern that has made our name so well known throughout the earth.

This Lantern has our new round-top oil pot, and is a very handsome little Lantern. It is 11 inches high (the Victor is 13 inches) and weighs 22 oz. (the Victor 30½ oz.). It burns well and has a No. 1 burner, ⅝-in. wick, takes a U. S. globe and is made in Tin and Brass.

It has the same convenient side lift as our Victor and Monarch Lanterns. It can be filled, lighted, regulated and extinguished without removing the globe.

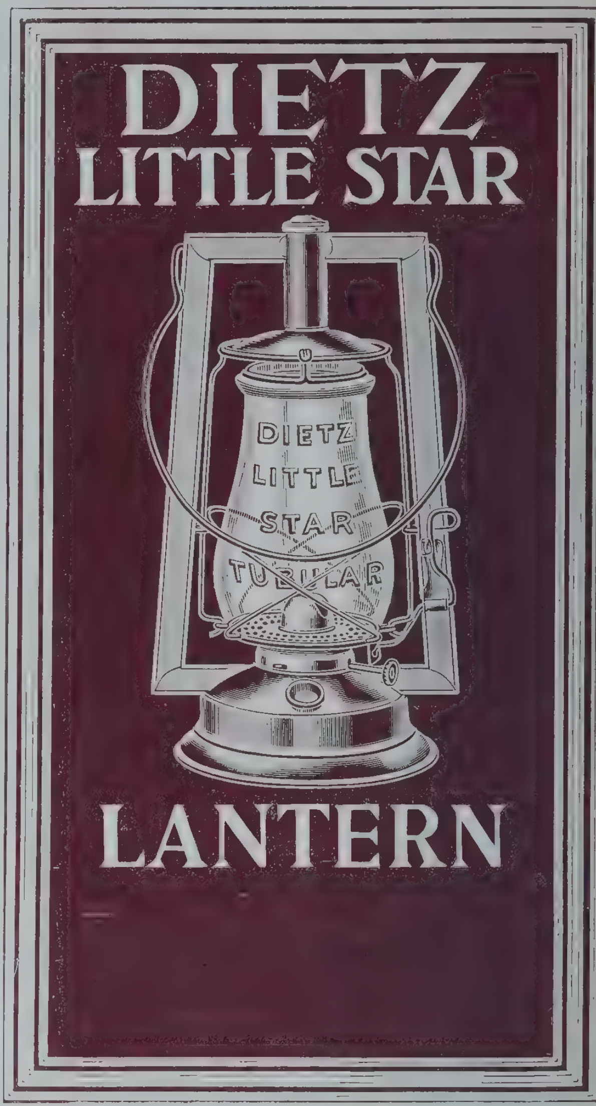
The oil pot holds 9 oz. of oil and will burn 13 hours with one filling.

They are packed in cases containing one doz., weighing 27 pounds (gross).

We are the largest and oldest manufacturers of outdoor Lamps and Lanterns for every conceivable purpose. We will be pleased to send you proforma invoice, showing cost of one gross or more of the Little Star Lantern laid down in your port or any other Lantern you may select in our catalogue (Spanish or English), which we will be pleased to mail you upon request.

Tin, - $8.50 per doz.
Brass, satin finish, $12 "

Discount for Export, 50 and 10 per cent.



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Established 1840.

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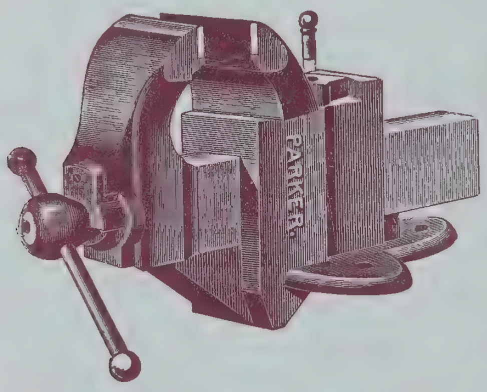
Parker Vise



Unequaled for Strength, Durability and Finish.

Has stood the test of over 50 YEARS.

EVERY VISE MADE FOR SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over **60 YEARS** and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
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Lamps and Chandeliers,
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Scarfs, Music Cabinets,
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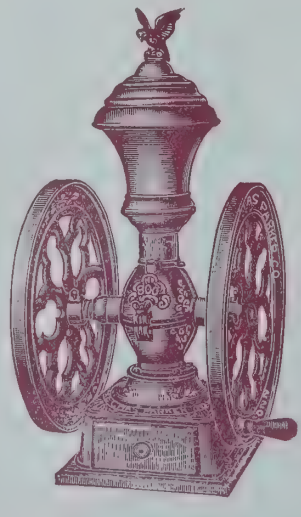
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.



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(Incorporated 1885),

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and "Crystal," "Imperial," "Jewel," "X Ray," "Royal Pound," "Telephone," "New Home" and "Favorite"

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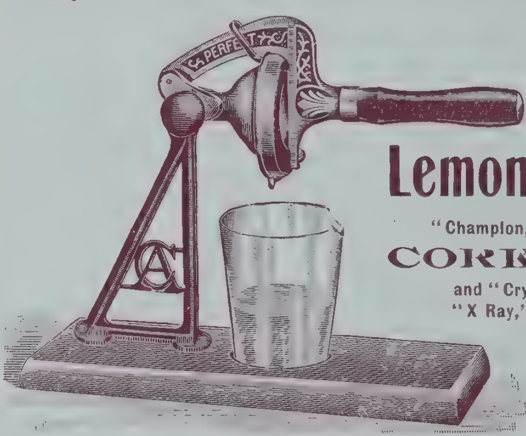

"Perfect" Lemon Squeezer No. 20.

No. 20. Designed especially for family use. Mounted on wood and can be moved around as desired. The frame is highly polished and nickel-plated. The parts coming in contact with the lemon are made of malleable iron, heavily coated with tin and will not corrode. Sample dozen, boxed ready for steamer, f. o. b. New York, **$12.00.** Size of box: 13x17x21 in. Weight: gross, 50 lbs.; net, 36 lbs.

No. 1. Neat looking; reliable. Designed for bars, restaurants or wherever a stationary lemon squeezer can be used. Can be readily detached from bracket or holder for cleaning purposes by simply lifting it out of the socket. Constructed of the same material as No. 20. Sample Dozen, boxed ready for steamer, f. o. b. New York, **$12.00.** Size of box: 11½x13½x23¾ in. Weight: gross, 70 lbs.; net, 55 lbs.

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Gets All of the Juice and Gets It Easy.

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Manufacturers of HIGH-GRADE DESKS OFFICE HOME FOR EXPORT.

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"The Finest Factory in America." Built Expressly for Export Trade.

THREE-SECTION BOOKCASE.

Set up with top and base, showing drawer. Each section measures (inside) 32 in. in width and 10¼ in. in height. Made of selected quarter-sawed oak, wax or handsome polished finished.

Special Offer for Introduction Abroad.

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TWO Three-Section Bookcases, complete with top and drawer base, as shown in illustration, and

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Each Three-Section Bookcase weighs net 80 pounds, gross 120 pounds, and measures 6 cubic feet.
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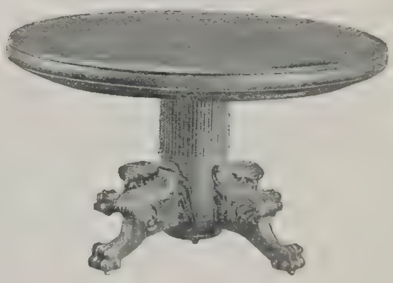

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DINING TABLE.

Round top, 52 inches. Made of fine selected quarter-sawed oak, hand-carved. Special offer, 8-foot length.

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Patent Leather Polish.

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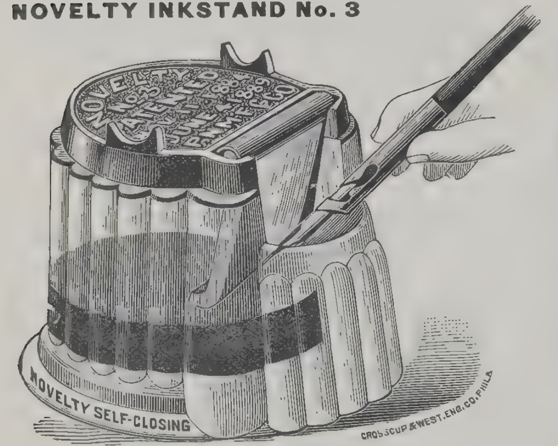

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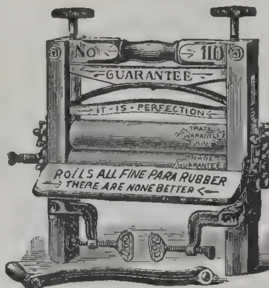
Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.



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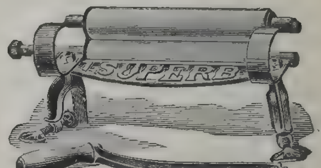
Prices.



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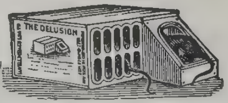

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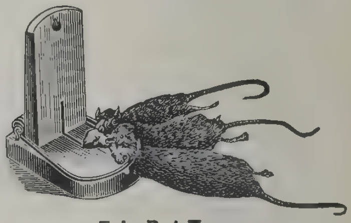
Requires no setting.

Rex Trap.

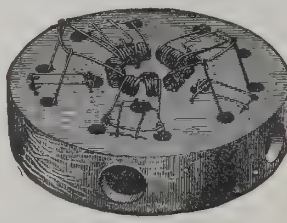
Made in two sizes: large size for rats; small size for mice.



Erie Rat Trap.

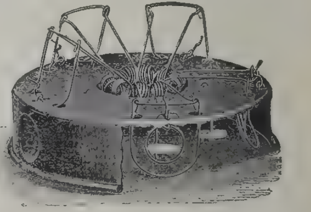
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish.



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Hand presses, easy to use by man or boy. Typesetting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **$40.00.**

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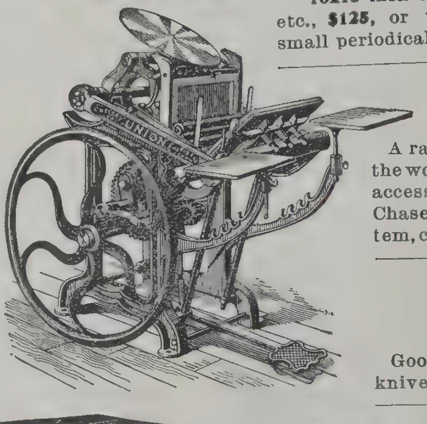

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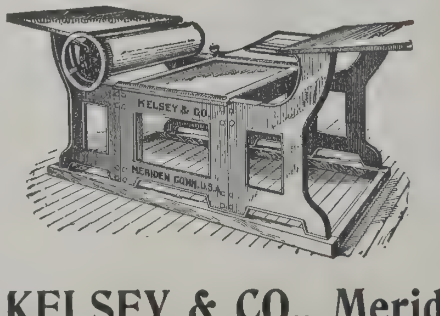
CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **$12.00.**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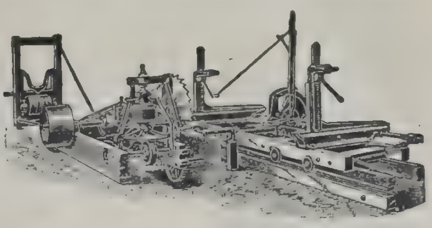
Engines, Boilers, Threshers, Grain Drills, Plows, Cultivators, Harrows, etc., etc.

THE LARGEST AND BEST EQUIPPED FACTORY IN THE STATES.



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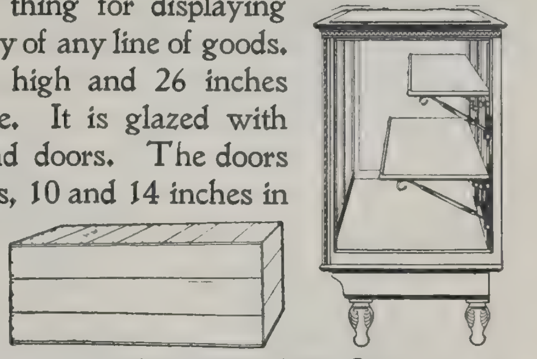
KNOCK-DOWN SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.



8-Foot No. 31 Show Case.

Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 384 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.

GRAND RAPIDS FIXTURES CO.

GRAND RAPIDS, MICHIGAN, U. S. A.

BENTLEY & GERWIG FURNITURE CO.,

Manufacturers of the

BEST OFFICE DESKS AND WARDROBES IN THE WORLD FOR THE MONEY.

THAT'S ALL WE CLAIM.

Export our specialty. Our patented knock-down device makes it easy to set up our Desks in 10 minutes.

POSITIVELY GUARANTEED TO BE THE BEST DESKS IN THE WORLD.

Prices range from $10.50 to $40.00 on Roll-Top Desks and from $7.25 to $17.50 on Flat-Top Desks. Wardrobes from $5.75 to $19.00.

All prices are for goods packed for export. Write for catalogue.

BENTLEY & GERWIG FURNITURE CO.,

Cable Address, "Lonbent." PARKERSBURG, W. VA., U. S. A.

BORN & CO. Columbus, Ohio, U. S. A.

ONE OF A DOZEN good reasons why you should drink Born's XX PALE BEER is because it is brewed from the best materials. A GOOD SPRING TONIC.

BREWERS and EXPORTERS of

BORN'S CELEBRATED XX PALE and MUENCHNER BEERS.

The Absolute Purity and Superior Flavor of Our Beers Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts Born's Muenchner, packed in barrel } **$10.00**
3 " " " XX Pale " " " } net cash, F. O. B., N. Y.
5 doz. pints Born's Muenchner, packed in barrel } **$10.00**
5 " " " XX Pale " " " } net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), **$9.00** per barrel, F. O. B., N. Y.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size..........$14.00
Price per gross, small size.......... 7.50
Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.

Griffin Parisian Dressing. A Black Dressing for Ladies' Shoes
GRIFFIN
PARISIAN
DRESSING
A BLACK DRESSING
FOR LADIES & CHILDRENS SHOES
MADE OF MOROCCO, KANGAROO, DONGOLA, PEBBLE AND STRAIGHT GOAT, GLACED AND FRENCH KID.
Griffin Manufacturing Co.
NEW YORK. U.S.A.

We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes.

Price, per gross, **$8.00.**
Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.

GRIFFIN
STERLING COMBINATION
FOR BOX CALF VICI KID CORDOVAN KANGAROO GLAZED KID GOAT AND ALL BLACK DRY LEATHER
GRIFFIN MFG
MANUFACTURING 82 CORTLANDT NEW YORK U.S.

Price per gross, large size..........$15.00
Price per gross, small size.......... 8.00
Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.

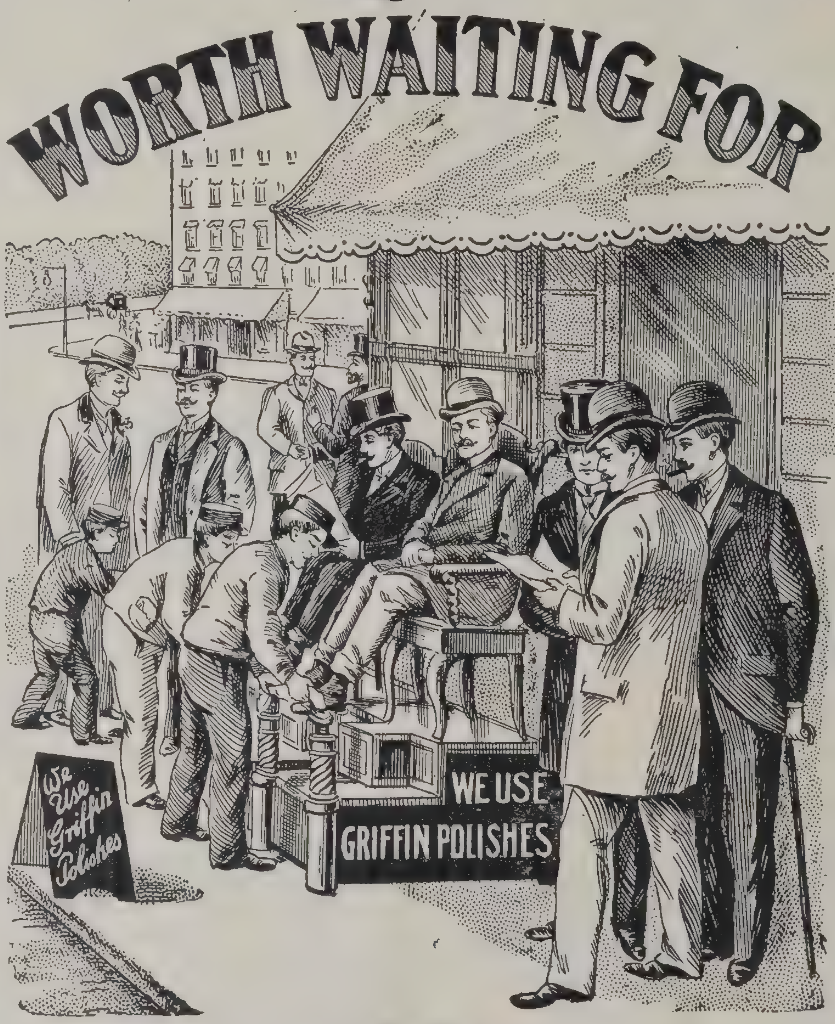
Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty is should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size..........$6.00
Price per gross, small size.......... 3.50
Discount, 10 per cent.



Griffin Patent Leather Polishing Paste.

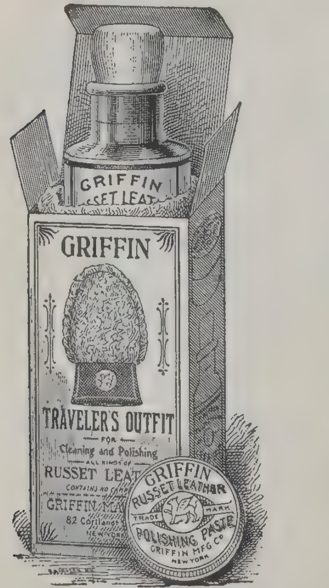
Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size..........$6.00
Price per gross, small size.......... 3.50
Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross..................$18.00
Discount, 10 per cent.

GRIFFIN SNOW WHITE.

GRIFFIN
TRADE MARK
SNOW WHITE
FOR CLEANING AND REWHITENING WHITE SHOES MADE OF CANVAS BUCKSKIN AND SUEDE.
NEW YORK.
GRIFFIN MFG. CO

For cleaning and rewhitening white shoes made of canvas, suede and buckskin.

Price, per gross, **$10.00.**
Discount, 10 per cent.

Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, Franch Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross..................$18.00
Discount, 10 per cent.

NONE BETTER MADE AT ANY PRICE.

Send us a trial order through any commission house in New York; above prices f. o. b N. Y.

GRIFFIN

High-Grade Shoe Polishes.

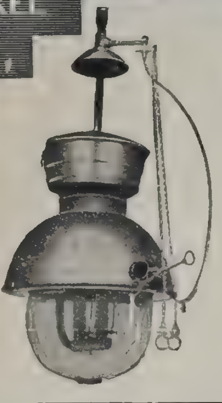
GRIFFIN M'F'G CO.,

82 Cortlandt St., New York, U. S. A.

THOMAS K. OBER & CO. (INC.)

832 DREXEL BUILDING, PHILADELPHIA, PA., U.S.A.

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.



No. 190x.
Outside Lamp; outfit with tank; 2,000 candle-power; 30 inches.

KEROS INCANDESCENT OIL LAMPS

give the most economical light in the world. Burn 90 per cent. of air to 10 per cent. of oil. Air costs nothing.

One Gallon of Kerosene Oil Gives a 2,000-Candle-Power Light for Twelve Hours.

PERFECTLY SAFE.

Lamps for Lighting Streets, Stores, Parks, Wharves, Mines, Plantations and Private Houses.

See June, 1904, number of this Journal for illustrations of various styles. Illustrated catalogues free on application.

No. 501.
Bracket Lamp; outfit with tank; 1,000 candle-power; 15 inches.

THE SPRAMOTOR

PAINTING AND WHITEWASHING MACHINE.

"DOES THE WORK OF TWENTY MEN."

Spramotor Painting and Whitewashing Machine No. 0. Outfit G.

WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR.

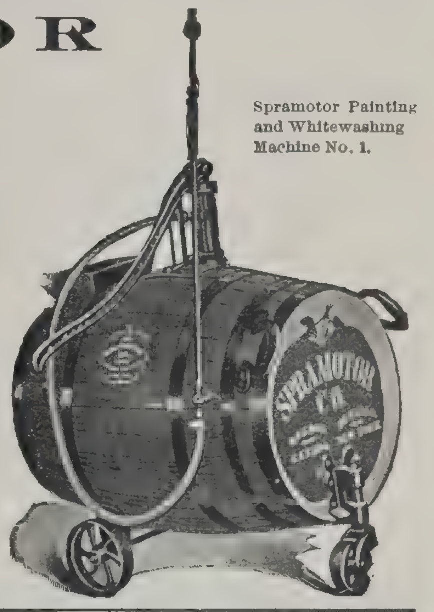
The Spramotor has been adopted by the Russian, Canadian, Belgian and New Zealand Governments, as well as in the Experimental Stations of Ontario, Manitoba, Quebec, Nova Scotia, British Columbia and many of the States within the United States of America.

NOTE.—The prices quoted, U. S. gold or its equivalent, are for **Export only**, include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

Spramotor No. 0, Outfit G, with ten feet of hose, hand valve and eight-foot iron extension pipe, patent drip guard and one Spramotor nozzle. Net weight, 22¼ pounds; gross weight, 41 pounds; boxed, 12x12x34 inches. Price, complete	$ 8.00
Spramotor No. 0, Outfit G, price per dozen	90.72
Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65¼ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete	15.00
Spramotor No. 1, price per dozen	166.32

These machines will apply any kind of COLD WATER or OIL PAINT.

SPRAPAINT, a Paint in DRY-POWDER FORM, only requiring the addition of cold water for instant use. Specify "Spramotor" and "Sprapaint" when ordering.
For INTERIOR use (white), in 400-pound barrels, price per ton, **$42.00.**
For EXTERIOR " " " " " " " " 90.00.

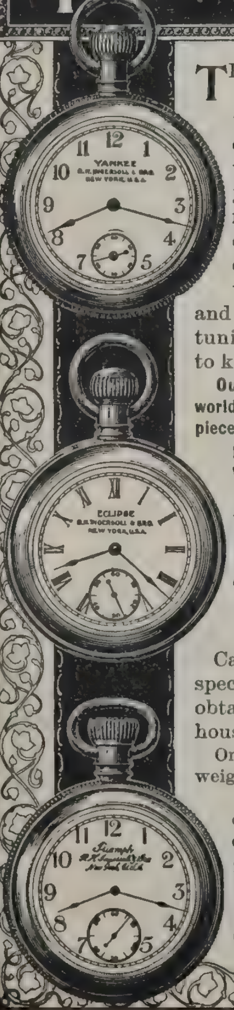


Spramotor Painting and Whitewashing Machine No. 1.

THE SPRAMOTOR CO., Manufacturers, - London, Canada.

Cable Address: "Spramotor," London, Canada. Codes: Directory, A B C 4th, and Western Union.

THE INGERSOLL AMERICAN WATCHES



THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of timepieces. The output is five thousand watches per day, which go to all parts of the world.

PRICES

Yankee, $7.80 doz.
Eclipse, $10.20 doz.
Triumph, $13.20 doz.

F. O. B. New York.

Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 1¼ cu. ft.

Send all orders through your commission house and send us copy of same.

Robt. H. Ingersoll & Bro.,
Manufacturers,
67 Cortlandt St., New York City, U.S.A.

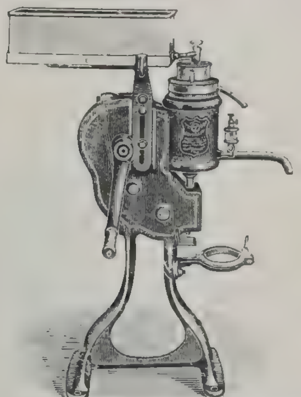
THE WORLD'S CHAMPION DAIRY BUTTER MAKER

Mrs. M. L. HOLMES, of Owatonna, Minn., secured THE HIGHEST SCORE on Dairy Butter in the **1st, 2d and the 4th** butter-scoring contests held at the World's Fair, St. Louis, Mo., thereby winning the **World's Championship.**

Mrs. J. H. McRostie, of the same place, secured the SWEEPSTAKES at the 3d scoring, in same contests.

Proof enough that **the U. S. makes the best butter** BECAUSE EACH ONE

USES



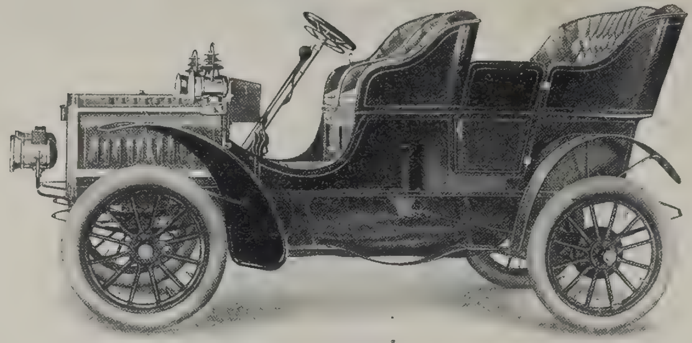
The U. S. CREAM SEPARATOR

The most simple, durable and thorough machine for any dairyman who wants to produce the best butter at the least cost.

THE VERMONT FARM MACHINE CO.
BELLOWS FALLS, VT.

Send for Handsome Booklet in Colors Illustrating "The U. S. Way."

Rambler



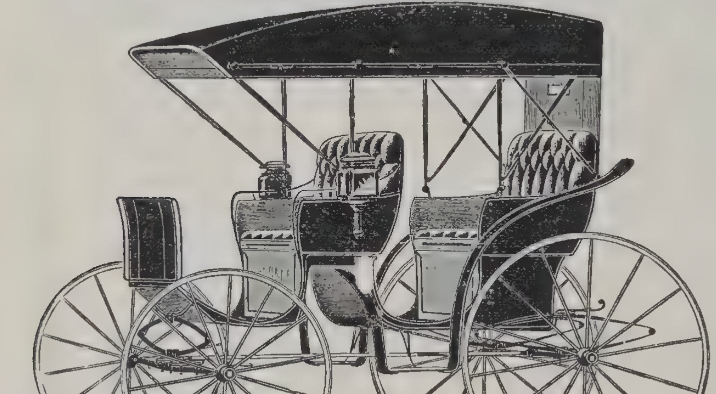
SURREY, TYPE ONE, 1905 MODEL.

IN this vehicle the speed is regulated by the throttle attached to the steering wheel, requiring only one hand to steer and control. The air-regulating device economizes gasoline. The ignition is timed automatically by a governor in exact requirement to the speed of the engine. 90-inch wheel base, with pressed steel frame. Movable steering pillar. 16 horse-power. **$1,350.** Packing and freight, to New York, $62.50; to San Francisco, $167.50. We will be pleased to send printed matter, free, upon request.

THOMAS B. JEFFERY & COMPANY,

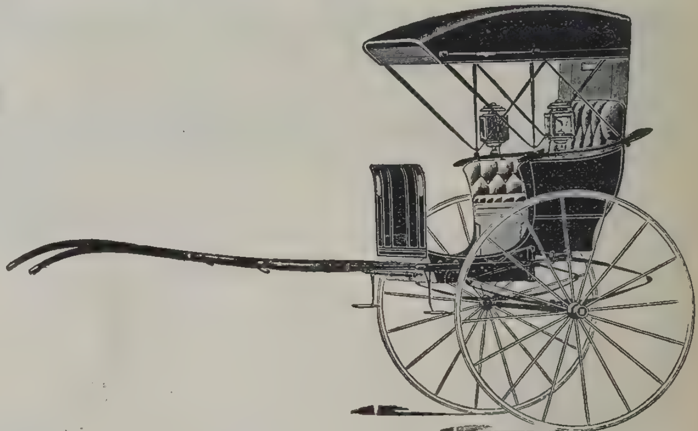
Main Office and Factory: KENOSHA, WISCONSIN, U. S. A.

HIGH-GRADE VEHICLES AND HARNESS

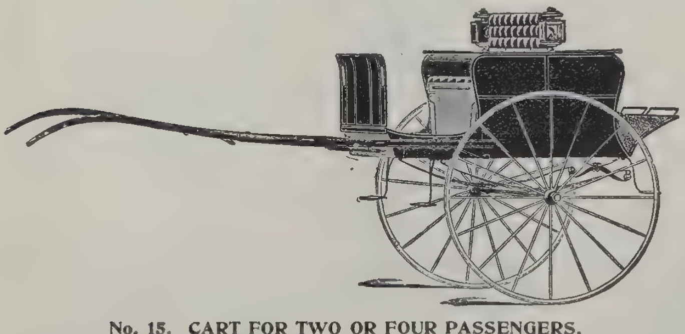


No. 2003. THREE-SPRING CARRIAGE.
This is a large, roomy, comfortable carriage, built throughout very strong and substantial.

We
Manufacture
90
STYLES
OF
VEHICLES,
65
STYLES
OF
HARNESS.



No. 10. CART WITH TOP.
No. 10 cart is a most excellent rider, free from horse motion. The construction throughout is the best and is guaranteed to stand in any climate.



No. 15. CART FOR TWO OR FOUR PASSENGERS.
Is perfectly balanced for either two or four passengers by sliding seat forward or back. Guaranteed in every particular first class. Free from horse motion.

Our general catalogue, fully describing complete line of vehicles and harness, mailed on application. Address

No. 3001. HEAVY CORNING BUGGY.
Guaranteed to give perfect satisfaction over roughest, poorest roads.

THE COLUMBUS CARRIAGE AND HARNESS CO., Columbus, Ohio, U. S. A.

The American Exporter

[Founded by Root & Tinker, 1877],

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by Howard Lockwood & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - - Publishers
Bennett Building, New York.

Published on the 1st of each month.
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Entered at the New York Post Office as Second-class Matter.

A NEW YEAR'S GREETING.

THE AMERICAN EXPORTER at the opening of the new year extends to all its friends at home and abroad its most cordial greetings and best wishes.

The year just passed has been a prosperous one. The demand for American goods in almost all lines has shown a healthy and, in some cases, an enormous growth, and in the few instances where the exports of a commodity have fallen off this condition has been easily explained by some temporary and unusual circumstance.

This growth in our foreign trade is an indication not only of prosperity at home, but of prosperity abroad. In these days of the cable and the telegraph, of the steamship and the locomotive, national boundaries have been almost wiped out. Business and finance have become international in their character, and hard times in one country can no longer be confined within the boundaries of that country. The effect of a crop failure or a manufacturing depression in the most remote country of Europe or Asia is felt immediately to a greater or less extent in America. The natural result of this growing interdependence is that we are more interested in our neighbors over the seas or across the borders, and interest usually begets liking. There is nothing that will more quickly wipe away the old national prejudices and hatreds than intercourse between peoples of different nations, and trade is intercourse. Foreign trade, then, is the true civilizer, and the merchant who promotes trade between the nations of the world does more for the cause of international peace than all the preachers and diplomats.

The American Exporter is proud that it is playing a part in this work of civilization. Its aim is to bring the buyer of American goods and the seller of them together, and it feels confident that in doing this it is not only promoting the welfare of the individual buyer and seller, but also the advance of true civilization.

COUNTRY'S POLICIES DISCUSSED.

PRESIDENT ROOSEVELT'S message to Congress is undoubtedly of great interest to all our readers. The whole world has been watching to see how the President, no longer an accident or the result of a tragedy, would bear himself on what was his first public appearance after his tremendous endorsement by the American people. The world has not been disappointed. The message is just what those who have been watching the man for the last three years expected. There is no sign of any weakening from the policies of McKinley, but there has been added to them the distinctly Rooseveltian doctrine that this country must play the part of a sort of international and benevolent policeman, in the Western Hemisphere at least.

The President's declarations on the foreign policy of the country and on the army and navy are inseparable parts of a homogeneous nation. He pleads with the nations of the world for peace, but for "the peace of justice," a phrase which has attracted the attention of critics both at home and abroad, and which seems destined to become historic, and he points out that there are other kinds of peace which are worse for a nation, and the world at large, than war. He remarks that there is not yet any tribunal with the power to right an international wrong and that therefore the only way that a nation can maintain its rights is by force. Disarmament of the great nations of the earth, he declares, would inevitably be followed by a relapse into barbarism.

Referring to our relations with the other nations of the Western Hemisphere the President declares that the United States has no land hunger, and is not seeking the territory of any of them. He declares in plain language, however, that chronic wrongdoing or an impotence which results in the loosening of the ties of civilization, may force the United States to play the part of an international policeman, and this attitude he bases on the Monroe doctrine. In other words we must do ourselves what we refuse to allow European nations to do in this hemisphere.

From this discussion of foreign policies it is a short step to the plea that Mr. Roosevelt makes for a strong army and navy, and more particularly for a strong navy. The navy he declares is the strong arm of the Government in enforcing respect for the just rights of the United States in international matters. "Our voice," he says, "is now potent for peace, because we are not afraid of war, but our protestations for peace would neither receive nor deserve the slightest attention if we were impotent to make them good."

One part of the President's message which is of great importance to the readers of The American Exporter is that pleading for an improvement of the consular service. He urges that salaries be substituted for fees and that the proper classification, grading and transfer of consular officers be provided. He also urges the passage of a national quarantine law to take the place of the conflicting and often inefficient State laws, which he declares are in effect a restriction upon international commerce.

There is no change from the declared policy of his party in the President's reference to the currency question, which may now be assumed to be settled and outside the realm of discussion. On the trust question the President urges conservative action in dealing with the great corporations, which he is insistent, however, must be compelled to observe the law. In discussing the railroad-rate question he declares unequivocally for a law to stop all rebates, and urges that power be given to the Interstate Commerce Commission to set aside a rate found to be unjust and to fix a rate to take its place, which shall hold pending a review by the courts.

Considerable space is devoted by the President to a discussion of our growing agricultural exports, and of the work to aid in this development being done by the Department of Agriculture. The introduction of new crops through its efforts is discussed and commended.

President Roosevelt quotes from President McKinley's two last messages on the desirability of extending our trade with the Orient and especially with China. He emphasizes the importance of securing proper information and data with a view to the enlargement of our trade with Asia, and specifically calls to the attention of Congress the suggestion of our consular representatives in China that the United States establish somewhere within the Empire a suitable place for a permanent display of American goods. Much space is given to a discussion of the progress of the Philippines under American rule and the President urges on Congress the passage of suitable legislation for the benefit of their inhabitants.

Taken as a whole there has probably never been a President's message which entered so exhaustively into the requirements of our foreign trade and showed such an intelligent comprehension of those requirements. If all the suggestions which he makes were carried out by Congress the United States would soon take first place among the trading nations of the world.

EXPORTS OF MANUFACTURES INCREASING.

ONE of the most encouraging features in the reports of the Government Bureau of Statistics is the fact that the exports of manufactured articles by the United States during the year just finished show a greater proportional increase than any other division. There has never been any dispute that America could supply the world with agricultural products and did supply the world with a great many of them—cotton, for instance. Many foreigners have taken the position, however, that because of the high wages paid here, the great cost of living, and a hundred other reasons, suggested probably by the wish to make a case, America could never enter the world's markets on manufactured goods.

The completed figures of the Bureau of Statistics indicate that the increase occurs chiefly in raw cotton and manufactures, cotton exports for the first eleven months being $14,000,000 in excess of the corresponding months of 1903, while the ten months' figures of manufactures already available show a gain of $64,000,000 over the exports for the corresponding period of 1903.

Well, America has entered the world's markets, and has entered them so effectually that she is gradually winning them away from some of the critics who a few years ago were disposed to sneer at her efforts. Her exports of manufactured products show a steady growth from year to year, which is the best proof that the world is pleased with them, for in the export market goods are bought and sold strictly on their merits. It may be possible by protective tariffs or other devices to induce the buying public at home to take inferior or unsatisfactory goods, but in the export markets the American goods have to meet and overcome just these conditions. That they have held their own and have gained in popular favor is the truest test of their merit.

The carping critics who declared that America could never compete with the countries of Europe on manufactured products because her workingmen were better paid and lived better, forgot that the American workingman gives his employer more for his money than the laborer of Europe. The efficiency of our labor is higher, and, unit for unit of production, labor costs no more in the United States than anywhere else. European workingmen and mechanics attracted to this country by the high wages paid often complain that they must work so much harder here to keep up with the procession that they more than earn the extra money which they receive.

Then, too, the critics forgot America's greatest advantage—her unlimited natural resources. Nowhere on the face of the globe is there another country so lavishly supplied with all the raw materials of production. Her agricultural possibilities have never even been thoroughly tested. There are still vast areas to come under cultivation, and her wealth in all kinds of minerals is unsurpassed by that of any other country, while she is supplied with an abundance of cheap lumber and cheap fuel. There is no reason why, in a very few years, America should not succeed to Great Britain's title of the workshop of the world, as she is already known as the world's granary.

AMERICAN AUTOS TO INVADE PARIS.

THE declaration by E. R. Thomas, an American automobile manufacturer, that in a very few years Americans will be shipping high-grade automobiles to Paris, will be received with surprise by some and incredulity by others, but not by those who are familiar with the facts. France took the lead in the manufacture of auto-cars, because she had the trained workmen and the market in conjunction. America soon had the market, and it did not take her long to train the men. At first, however, the attention of the American manufacturer was directed toward the perfection of the commercial vehicle rather than the pleasure-car, and the result of this is that the American commercial automobile is now to be found in all the commercial countries of the world. Having captured that market the Americans have started to capture the market for pleasure-vehicles, and what they go after they generally succeed in getting.

ONLY THE MEDALS ARE PLATED.

THE St. Louis Fair directors in deciding to have all the award medals made of bronze and plated with gold or silver, as the case may be, are doubtless proceeding on the theory that it is the award, not the trifling value of the medal, that is prized by the successful exhibitor, and in this they are exactly right. The medals may be plated, but the certificates of merit which accompany the medals are pure gold.

How many of the exhibitors who receive these medals with the accompanying certificates will follow the example of the slothful servant of Holy Writ and bury their talent in the ground? Of what use is it to have spent money, time, and effort, to secure the award if the world does not know of it? The wise manufacturer whose goods have won commendation from the World's Fair juries will take every means to make this fact known, not only to his present customers, but to those who may become customers in the future. The mere publication of the lists of successful exhibitors as given out by the committee on awards is not enough. Few persons have the time or patience to wade through these long lists and identify the goods and the manufacturers that they are interested in. In order to make the award pay for the trouble of securing it is necessary to place the fact that you have won it constantly before your customers by advertising, intelligently, and through the proper mediums. Do you want to reach the export trade? THE AMERICAN EXPORTER will place your story before the buyers of the world. Are you after an extension of your domestic market? There are a hundred good mediums by which you can reach your trade. If you fail, however, to take advantage of these opportunities of publishing your success to the world, all of the time and money spent on the preparation and maintenance of your exhibit has been wasted.

PROSPERITY IN IRON AND STEEL.

THE iron and steel trade is usually taken as one of the best barometers of the prosperity of the United States, and the experts who have been watching its course predict that the present year will see a record prosperity in this branch of industry, which, if the precedents hold good, will be reflected in all lines.

One of the most hopeful signs is the increased demand for pig iron which began about October and has been growing ever since. The optimism of the steelmakers is reflected also in the speculative markets, where the price of United States Steel Corporation shares has been steadily rising in anticipation of renewed and larger dividends.

Orders for railway supplies are coming in freely, both for home consumption and for export, and this in itself is an indication of growing and general prosperity. Railroad executives do not plan extensions and betterments of their roads and rolling stock in the face of a declining business. The fact that they are ordering freely is worth oceans of optimistic talk as an indication that they clearly see a prosperous year ahead. Much of this in America is due to the great movement of manufactured goods and the immense cotton crop that is to be moved. "Ordinary package merchandise" is the way the American railway presidents describe the bulk of the increased business.

A very gratifying feature of the iron and steel exports last year, and these exports have constituted more than 25 per cent. of the total foreign shipments of the United States, is that the chief demand was for articles which were in slack demand at home on account of the depression in business in the early part of the year. Railroad supplies, such as steel rails, plates, sheets and billets, took the lead, and the domestic mills were kept running full time on these products to supply the foreign demand.

Another gratifying feature of our foreign trade has been the increasing demand for the finer products of American ingenuity, such as typewriters, sewing-machines, machinery of all kinds and agricultural implements. America has long led the world in the production of labor-saving devices and machinery, and apparently she is not losing ground, but rather increasing her lead.

ARBITRATION, THE MODERN METHOD.

IT is a matter to be regarded with profound satisfaction that a treaty of arbitration is about to be concluded between the United States and Great Britain, and that agreements are also pending between the great American republic and Germany, Italy and France. The day of war as a means for the settlement of disputes between civilized nations has gone by, just as the duello as a means of settling private disputes was long ago abandoned by civilized individuals, but the machinery for establishing such a settlement between nations has yet to be created. The Hague Court has done much to provide such machinery, but it must be supplemented by agreements between the nations, providing in greater detail for the methods and procedure.

When a dispute arises there is no time to provide this machinery. With the best intentions in the world the statesmen of two countries which have become involved in a dispute may be unable to withstand the popular clamor long enough to provide the machinery necessary for a peaceful settlement of the controversy. The populace is generally unthinking, and in nine cases out of ten its voice is for war. It does not stop to think that it is upon itself that the burdens of war chiefly fall, and that the benefits, if any there are, are not reaped by it. More than once has a nation been forced into a disastrous war against the wishes and best judgment of its statesmen.

"But," it may be said, "what is the need of a treaty of arbitration between the United States and Great Britain? The ties of blood and friendship between these two great branches of the Anglo-Saxon race are too strong to be broken by any dispute that may arise." That may seem to be the case now, but international friendships are fragile things. Conditions may change, and circumstances may arise which might force us to take a position opposed to that of England on some great international question. We were perilously near to war with England at the time of President Cleveland's Venezuela message. Of course, since then our own Spanish-American war and the war in the Far East have drawn the two nations much closer together, but who can say that a rupture will never come? How much better, then, to provide the means for settling a dispute now, when relations are friendly, than to wait till they have become strained and it may be impossible for the two nations to agree on anything.

One of the greatest object lessons of the need of permanent arbitration treaties was the outcome of the North Sea affair between Great Britain and Russia. As is generally known, a Russian fleet while passing through the North Sea fired on a fleet of English fishing boats and sank one of them. No one in his sober senses imagined for a moment that this deplorable incident was due to anything more than a mistake. But when the news of the attack became known England was aflame. The press and the people demanded war, and it was with the utmost difficulty that her cool-headed statesmen succeeded in arranging for an international court of inquiry into the incident. How much easier it would have been had there been a permanent agreement between England and Russia to meet such contingencies.

It is to be hoped that the secretaries and ambassadors who have these treaties in charge will use all reasonable haste in completing them. Commerce demands peace as an essential to its successful prosecution. Nothing is so disturbing and disastrous to trade as war. Even the threat of war is immediately felt. Those short-sighted persons who see a national profit in supplying armies with food and clothing forget that the soldier who is killed has eaten his last bit of bacon and worn his last suit of clothes. A potential customer for many years to come has been removed by his death, and no contracts for army supplies, either for Russia or Japan, can make up to America what she will lose in years to come from the slaughter now going on at Port Arthur.

SECRETARY WILSON'S figures on the farm production of the United States ought to open the eyes of persons who are used to farming on a small scale. A farm that turns out nearly five billion dollars' worth of products in one year is a pretty good property, and it is only about half developed at that.

THE COST OF WAR.

THE American Congress has been asked to authorize the compilation of statistics showing the cost of war and war preparations in all countries since 1800 in which the data are available. If the work proposed is done there can be no doubt that the figures thus compiled will literally "stagger humanity" by their magnitude.

One of the great difficulties in compiling exact statistics of war is the trouble of arriving at the loss to industry and commerce. Such loss, of course, is purely potential, but it is none the less real. No one can tell to what extent a country suffers by the withdrawal of hundreds of thousands of men for a term of years from active productive life, and that, too, at the period when their productive capacity ought to be the greatest. Charles Sumner found in 1845 that the United States Government, from 1789 to 1843, had spent for civil purposes $246,620,055, while, deducting the cost of the war of 1812 with Great Britain, it had spent in the same period $1,335,000,000 in preparation for war and $400,000,000 for the militia. The United States to-day appropriates annually about $200,000,000 for direct war preparations.

One way of getting at the approximate burden being carried by the world to-day, as the result of former wars, is by taking the national debts of the various civilized countries. Practically every penny of them represents war expenditures, but they do not represent the whole. All that they stand for is the unpaid balance which has been handed down to posterity for liquidation. These national debts approximately amount to $30,000,000,000.

All these figures, though, are futile, as compared with the real cost. There can be no dispute that a nation at war suffers many times more in the interruption of her commerce than she does by the direct war expenditures, and in these days of intertwined international interests what hurts one country hurts the whole world. Does any one imagine, for instance, that the commerce of Japan, although she has had almost undisputed command of the sea, has not suffered by the Russo-Japanese war? The withdrawal of the ships flying her flag from the commerce of the seas for use as troop ships for a time eliminated her from the carrying trade of the world. The withdrawal of her mechanics and laborers from industry to become food for Russian powder has created a scarcity of certain lines of Japanese goods, with consequent high prices and decreased consumption. The withdrawal of the one article of camphor alone from export at the beginning of the war affected the manufacturing trade of the whole world in many lines, and is still affecting it. Who can say that the cost of war can be measured in the mere figures of the expenditures on armaments?

THE world is used to hearing of new discoveries in science and new mechanical inventions, due to American skill and ingenuity, but it must be admitted that the older countries have led hitherto in the production of new varieties of fruits and vegetables. Now, however, America has come to the front with a wizard who produces fadeless flowers, thornless cacti, stoneless plums and new varieties of fodder. With characteristic generosity and public spirit Andrew Carnegie, whose name is known wherever the English language is spoken, has settled on him an endowment of $100,000, which will enable him to devote his life to this most important work, and what work can be more important than improving the things that grow, from which in the ultimate analysis all wealth is derived?

ACCORDING to the old theory that the best method of keeping the peace is to be prepared for war, Secretary Morton's naval estimates just submitted to Congress prove America to be the most peaceful nation on earth. Mr. Morton demands $114,530,000 for the maintenance of the navy and the construction of new ships. Four or five years ago we were spending less than half this sum.

IF the mechanical cotton-picker proves to be the success it is reported to be the labor problem in the Southern States of America will be solved. The field labor now employed in picking cotton will be released for the factory, and the Southern States will become a great producer of cheap cotton goods for both the home and export markets.

THE NORTH SEA AFFAIR.

THE international commission of naval officers which has assembled in Paris to consider the controversy which has arisen between Great Britain and Russia over the action of the Russian Baltic Fleet in firing upon English fishing vessels in the North Sea, has before it a question which is of vital interest to the commerce of the world. This body, known as the North Sea Commission, consists of five officers of high rank, each representing one of the great maritime powers, whose duty it is to decide whether the commander of the Russian fleet committed any violation of international law or naval usage in attacking inoffensive neutral ships in the open sea. Strictly speaking, the subject before the commission is purely military in character, and it hinges altogether upon questions of naval precedent. Whether the Russian attack, in which English ships and English lives were lost, was permissible under international law will not be determined by the principles of humanity and justice which prevail among private individuals, but by precedents which have been established in naval warfare.

Strange as it may seem, there is a growing belief among naval officers not only in England, but in the United States as well, that the commission will decide that the Russian commander blundered, but was guilty of nothing worse. Those who hold this view point out that in time of war it is the duty of a commander to see that no strange ships approach his fleet, and that if such vessels come near him without disclosing their identity it is his right to fire upon them. This, it is claimed, is exactly what happened in the North Sea. It is said that the fishermen either ignored or did not see the Russian's signals asking who and what they were, and that the Russian commander was therefore justified in regarding them as hostiles and acting accordingly. The result was that one fishing ship was sunk, one or two others were damaged, two men were killed and several wounded.

It will be seen that if the Russian commander's conduct was allowable under naval precedent and usage, every fleet that sails the sea on a mission of war is a deadly menace to inoffensive commerce. Should a merchant ship fall in with such a fleet she might be blown to pieces by a nervous admiral on a mere suspicion that she was of hostile character. As a matter of fact, the Russian Baltic Fleet, on its cruise to the Far East, has attacked other vessels besides those of the North Sea fishermen, and for the same reasons. The presence of that fleet at sea is a peril to every neutral ship in its path, and if it is held that its commander acted within his rights in the North Sea, the dangers which beset ocean commerce in time of war are vastly greater than has been commonly supposed.

Obviously the decision of the North Sea Commission will be a matter of deep concern to business interests throughout the world. If it shall declare that the Russian admiral's conduct was permissible under international law, then there should be such an amendment of the law as will give commerce the protection which it lacks. That harmless fishing ships and other neutral vessels may be destroyed as were those in the North Sea is monstrous and intolerable.

The spirit of the age is against the exercise of power so arbitrary and irresponsible. The dominant interest of the world today is peace, not war. The genius and enterprise of man find their noblest expression in merchant ships, not in battleships, and until the great nations unite in an agreement which shall afford secure protection for the harmless commerce of the seas we shall have advanced but little beyond the customs of piracy and barbarism.

GROWTH OF OUR MERCHANT MARINE.

ONE of the most promising indications that the American export trade is increasing is contained in the annual report of the United States Commissioner of Navigation, which tells of the steady growth of the American merchant marine, even in the face of laws which are not particularly encouraging to such growth. There is no better indication of a flourishing foreign trade than a flourishing merchant marine, and the increase of more than 200,000 tons in a year that started out as one of depression in shipbuilding and did not show any revival until it was more than half gone is a sure sign that the shipowners of the country are confident of full and profitable cargoes.

It must always be borne in mind in considering the statistics of American shipping that they cannot fairly be compared with those of any of the other great maritime nations. If a ship is owned in England, she flies the English flag; if in Germany, she flies the German flag; but an American-owned ship may fly the flag of any nation under the sun, and it is a fair statement to make that the great majority of American ships do not fly the Stars and Stripes. This is the result of laws designed to protect American shipbuilders which do not admit to American registry any but American-built ships, or ships which have undergone repairs in the United States to the extent of three-fourths of their original cost. It can be readily seen, then, that statistics of the growth of shipping that is officially American do not tell much about the real growth of the real American merchant marine. Were the statistics of American-owned ships available there cannot be the slightest doubt that a far greater proportion of growth would be shown.

Tin Production in the United States.

IN a discussion of the recent discoveries of large deposits of tin in Alaska the *Engineering and Mining Journal* points out the strange fact that although tin-bearing rocks and tin minerals have been found in many localities in this country, tin is the only one of the common commercial metals that is not regularly and systematically produced in the United States. This is considered especially remarkable, in view of the diversified geological character of the country, and it can therefore be understood that the discovery of productive tin mines in the territory of the United States causes unusual interest.

One effect of the discovery of tin in Alaska will be to place our manufacturers of tin plate, who are now competing successfully with all the world, in a still better position to capture the export markets. A cheap and plentiful supply of tin ore will, of course, aid in cheapening the finished product, and from the natural conditions, as well as for territorial reasons, American tin manufacturers will benefit by the Alaskan discoveries almost to the exclusion of the rest of the world.

In this connection also, says the *Engineering and Mining Journal,* the recent renewal of activity in tin mining in South Dakota is of interest.

According to reliable information received from South Dakota, the 20-ton mill at Tinton, near the Wyoming line, has been recently in operation, and several carloads of tin concentrate shipped to Wales for treatment.

The presence of gold and silver in some of the Alaska tin deposits has been reported, and may prove a factor that will add materially to the richness of the mines. According to the statements thus far received, the most promising tin deposits in the York region are the placers on Buck Creek, which are reported by Edgar Rickard to yield 8 pounds of 60 per cent. tin ore per cubic yard of gravel. Hess reports returns as high as 27 pounds of 60 per cent. tin ore to the cubic yard of gravel. Assuming a cubic yard of gravel to equal 1.5 tons of ore as mined in other places, we have a ratio of about 18 pounds of 60 per cent. ore to the ton, equal to 10.8 pounds of metal, or 0.54 per cent. to the short ton.

In order to properly appraise the commercial value of tin deposits already known, and any that may be discovered in the near future in the United States, it is essential to understand something of the results obtained elsewhere in this branch of mining. Frecheville gives the average richness of a number of Cornish mines for the ten years from 1871 to 1881, in pounds of black tin per long ton, as follows: Dolcoath 59 pounds; Cook's Kitchen, 43 pounds; Tincroft, 53 pounds; Carn Brea, 35 pounds, which is, approximately, equivalent to 1.8 per cent., 1.3 per cent., 1.6 per cent. and 1 per cent., respectively, in metallic tin. According to other authorities, the average yield in Cornish mines over a long period was not over 45 pounds of black tin to the long ton, or 1.95 per cent., which is equal to about 1.5 per cent. metallic tin. At Altenberg, in Saxony, the general average yield for a period of many years was from 0.3 to 0.5 per cent. black tin (cassiterite), equal to about 0.2 to 0.4 per cent. metal per ton. At Schlackenwald, in Bohemia, the yield is said to average from 0.4 to 0.5 per cent. black tin, equal to about 0.25 to 0.4 per cent. metallic tin to the ton. In the Zinnwald region, Bohemia, the average seems to have been about 0.5 per cent. black tin, equal to about 0.4 per cent. metal.

In Bolivia, South America, which appears to possess the richest tin deposits in the world, the average yield ranges from 3 to 5 per cent. metallic tin to the ton of undressed ore. The yield of the Mount Bischoff mine in Tasmania is given at about 2.75 per cent. black tin, equal to about 2.25 per cent. of metal per ton of ore. And at Durango, Mexico, according to Ingalls, the average tenor is something like 3.75 per cent. black tin, or about 2.25 per cent. of metal per ton of ore.

It will be seen, therefore, that the Alaska deposits compare favorably with those of the leading tin-producing localities of the world, and that provided the climate does not prove to be a handicap the mines there should be very profitable.

The President's Message.

PRESIDENT ROOSEVELT'S message was sent to Congress on December 7th, and it constitutes one of the most important documents ever put forth by an American executive. It is also one of the longest—more than 20,000 words. The following extracts are the passages which are of peculiar interest to the readers of THE AMERICAN EXPORTER:

THE TRUST PROBLEM.

"When we come to deal with great corporations the need for the Government to act directly is far greater than in the case of labor, because great corporations can become such only by engaging in interstate commerce, and interstate commerce is peculiarly the field of the general Government. It is an absurdity to expect to eliminate the abuses in great corporations by State action. It is difficult to be patient with an argument that such matters should be left to the States because more than one State pursues the policy of creating on easy terms corporations which are never operated within that State at all, but in other States, whose laws they ignore. The national Government alone can deal adequately with these great corporations. Great corporations are necessary, and only men of great and singular mental power can manage such corporations successfully, and such men must have great rewards. But these corporations should be managed with due regard to the interest of the public as a whole. Where this can be done under the present laws it must be done. Where these laws come short, others should be enacted to supplement them.

STOP ALL REBATES.

"Above all else, we must strive to keep the highways of commerce open to all on equal terms, and to do this it is necessary to put a complete stop to all rebates. Whether the shipper or the railroad is to blame makes no difference; the rebate must be stopped, the abuses of the private car and private terminal track and sidetrack systems must be stopped, and the legislation of the Fifty-eighth Congress, which declares it to be unlawful for any person or corporation to offer, grant, give, solicit, accept or receive any rebate, concession or discrimination in respect of the transportation of any property in interstate or foreign commerce whereby such property shall by any device whatever be transported at a less rate than that named in the tariffs published by the carrier must be enforced.

OUR AGRICULTURAL EXPORTS.

"The Department of Agriculture has grown into an educational institution with a faculty of 2,000 specialists making research into all the sciences of production. The Congress appropriates, directly and indirectly, $6,000,000 annually to carry on this work. It reaches every State and Territory in the Union and the islands of the sea lately come under our flag. Cooperation is had with the State experiment stations, and with many other institutions and individuals. The world is carefully searched for new varieties of grains, fruits, grasses, vegetables, trees and shrubs suitable to various localities in our country, and marked benefit to our producers has resulted.

"The facts concerning meteorology and its relations to plant and animal life are being systematically inquired into. Temperature and moisture are controlling factors in all agricultural operations. The seasons of the cyclones of the Caribbean Sea and their paths are being forecasted with increasing accuracy. The cold winds that come from the north are anticipated and their times and intensity told to farmers, gardeners and fruiterers in all Southern localities.

"We sell $250,000,000 worth of animals and animal products to foreign countries every year, in addition to supplying our own people more cheaply and abundantly than any other nation is able to provide for its people. Successful manufacturing depends primarily on cheap food, which accounts to a considerable extent for our growth in this direction. The Department of Agriculture, by careful inspection of meats, guards the health of our people and gives clean bills of health to deserving exports; it is prepared to deal promptly with imported diseases of animals, and maintain the excellence of our flocks and herds in this respect. There should be an annual census of the livestock of the nation.

"We sell abroad about $600,000,000 worth of plants and their products every year. Strenuous efforts are being made to import from foreign countries such grains as are suitable to our varying localities. Seven years ago we bought three-fourths of our rice; by helping the rice-growers on the Gulf coast to secure seeds from the Orient suited to their conditions, and by giving them adequate protection, they now supply home demand and export to the islands of the Caribbean Sea and to other rice-growing countries. Wheat and other grains have been imported from light rainfall countries to our lands in the West and Southwest that have not grown crops because of light precipitation, resulting in an extensive addition to our cropping area and our home-making territory that cannot be irrigated. Ten million bushels of first-class macaroni wheat were grown from these experimental importations last year. Fruits suitable to our soils and climates are being imported from all the countries of the Old World—the fig from Turkey, the almond from Spain, the date from Algeria, the mango from India. We are helping our fruit-growers to get their crops into European markets by studying methods of preservation through refrigeration, packing and handling, which have been quite successful. We are helping our hop-growers by importing varieties that ripen earlier and later than the kinds they have been raising, thereby lengthening the harvesting season. The cotton crop of the country is threatened with root rot, the bollworm and the boll weevil. Our pathologists will find immune varieties that will resist the root disease, and the bollworm can be dealt with, but the boll weevil is a serious menace to the cotton crop. It is a Central American insect that has become acclimated in Texas and has done great damage. A scientist of the Department of Agriculture has found the weevil at home in Guatemala being kept in check by an ant, which has been brought to our cotton fields for observation. It is hoped that it may serve a good purpose.

"The soils of the country are getting attention from the farmer's standpoint, and interesting results are following. We have duplicates of the soils that grow the wrapper tobacco in Sumatra and the filler tobacco in Cuba. It will be only a question of time when the large amounts paid to these countries will be paid to our own people. The reclamation of alkali lands is progressing, to give object lessons to our people in methods by which worthless lands may be made productive.

THE CONSULAR SERVICE.

"Our consular system needs improvement. Salaries should be substituted for fees, and the proper classification, grading and transfer of consular officers should be provided. I am not prepared to say that a competitive system of examinations for appointment would work well, but by law it should be provided that consuls should be familiar, according to places for which they apply, with the French, German or Spanish languages, and should possess acquaintance with the resources of the United States.

NATIONAL QUARANTINE LAW.

"It is desirable to enact a proper national quarantine law. It is most undesirable that a State should on its own initiative enforce quarantine regulations which are in effect a restriction upon interstate and international commerce. The question should properly be assumed by the Government alone. The surgeon-general of the National Public Health and Marine Hospital Service has repeatedly and convincingly set forth the need for such legislation.

MERCHANT MARINE.

"I especially commend to your immediate attention the encouragement of our merchant marine by appropriate legislation.

MARKETS IN THE ORIENT.

"The growing importance of the Orient as a field for American exports drew from my predecessor, President McKinley, an urgent request for its special consideration by the Congress. In this message of 1898 he stated:

> "In this relation, as showing the peculiar volume and value of our trade with China and the peculiarly favorable conditions which exist for their expansion in the normal course of trade, I refer to the communication addressed to the Speaker of the House of Representatives by the Secretary of the Treasury on the 14th of last June, with its accompanying letter of the Secretary of State, recommending an appropriation for a commission to study the industrial and commercial conditions in the Chinese Empire and to report as to the opportunities for and the obstacles to the enlargement of markets in China for the raw products and manufactures of the United States. Action was not taken thereon during the last session. I cordially urge that the recommendation receive at your hands the considerataion which its importance and timeliness merit.

"In his annual message of 1899 he again called attention to this recommendation, quoting it, and stated further:

> "I now renew the recommendation, as the importance of the subject has steadily grown since it was first submitted to you, and no time should be lost in studying for ourselves the resources of this great field for American trade and enterprise.

"The importance of securing proper information and data with a view to the enlargement of our trade with Asia is undiminished. Our consular representatives in China have strongly urged a place for permanent display of American products in some prominent trade center of that empire, under Government control and management, as an effective means of advancing our export trade therein. I call the attention of the Congress to the desirability of carrying out the suggestions.

OUR FOREIGN POLICY.

"In treating of our foreign policy and of the attitude that this great nation should assume in the world at large, it is absolutely necessary to consider the army and the navy, and the Congress, through which the thought of the nation finds its expression, should keep ever vividly in mind the fundamental fact that it is impossible to treat our foreign policy, whether this policy takes shape in the effort to secure justice for others or justice for ourselves, save as conditioned upon the attitude we are willing to take toward our army, and especially toward our navy. It is not merely unwise, it is contemptible, for a nation, as for an individual, to use high-sounding language to proclaim its purposes, or to take positions which are ridiculous if unsupported by potential force, and then to refuse to provide this force. If there is no intention of providing and of keeping the force necessary to back up a strong attitude, then it is far better not to assume such an attitude.

"The steady aim of this nation, as of all enlightened nations, should be to strive to bring ever nearer the day when there shall prevail throughout the world the peace of justice. * * * There is as yet no judicial way of enforcing a right in international law. When one nation wrongs another or wrongs many others, there is no tribunal before which the wrongdoer can be brought. Either it is necessary supinely to acquiesce in the wrong, and thus put a premium upon brutality and aggression, or else it is necessary for the aggrieved nation valiantly to stand up for its rights. Until some method is devised by which there shall be a degree of international control over offending nations, it would be a wicked thing for the most civilized powers, for those with most sense of international obligations and with keenest and most generous appreciations of the difference between right and wrong, to disarm. If the great civilized nations of the present day should completely disarm, the result would mean an immediate recrudescence of barbarism in one form or another. Under any circumstances a sufficient armament would have to be kept up to serve the purpose of international police, and until international cohesion and the sense of international duties and rights are far more advanced than at present, a nation desirous both of securing respect for itself and of doing good to others must have a force adequate for the work which it feels is allotted to it as its part of the general world duty. Therefore, it follows that a self-respecting, just and far-seeing nation should on the one hand endeavor by every means to aid in the development of the various movements which tend to provide substitutes for war, which tend to render nations in their actions toward one another, and, indeed, toward their own peoples, more responsive to the general sentiment of humane and civilized mankind; and, on the other hand, that it should keep prepared, while scrupulously avoiding wrongdoing itself, to repel any wrong, and in exceptional cases to take action which in a more advanced stage of international relations would come under the head of the exercise of the international police. A great free people owes it to itself and to all mankind not to sink into helplessness before the powers of evil.

NO LAND HUNGER.

"It is not true that the United States feels any land hunger or entertains any projects as regards the other nations of the Western Hemisphere, save such as are for their welfare. All that this country desires is to see the neighboring countries stable, orderly and prosperous. Any country whose people conduct themselves well can count upon our hearty friendship. If a nation shows that it knows how to act with reasonable efficiency and decency in social and political matters, if it keeps order and pays its obligations, it need fear no interference from the United States. Chronic wrongdoing, or an impotence which results in a general loosening of the ties of civilized society, may in America, as elsewhere, ultimately require intervention by some civilized nation, and in the Western Hemisphere the adherence of the United States to the Monroe Doctrine may force the United States, however reluctantly, in flagrant cases of such wrongdoing or impotence, to the exercise of an international police power. If every country washed by the Caribbean Sea would show the progress of stable and just civilization which with the aid of the Platt amendment Cuba has shown since our troops left the island, and which so many of the republics in both Americas are constantly and brilliantly showing, all questions of interference by this nation with their affairs would be at an end. Our interests and those of our Southern neighbors are in reality identical. They have great natural riches, and if within their borders the reign of law and justice obtains, prosperity is sure to come to them. While they thus obey the primary laws of civilized society they may rest assured that they will be treated by us in a spirit of cordial and helpful sympathy. We would interfere with them only in the last resort, and then only if it became evident that their inability or unwillingness to do justice at home and abroad had violated the rights of the United States or had invited foreign aggression to the detriment of the entire body of American nations. It is a mere truism to say that every nation, whether in America or anywhere else, which desires to maintain its freedom, its independence, must ultimately realize that the right of such independence cannot be separated from the responsibility of making good use of it.

NEED OF ADEQUATE NAVY.

"The strong arm of the Government in enforcing respect for its just rights in international matters is the navy of the United States. I most earnestly recommend that there be no halt in the work of upbuilding the American navy. There is no more patriotic duty before us as a people than to keep the navy adequate to the needs of this country's position. We have undertaken to build the isthmian canal. We have undertaken to secure for ourselves our just share in the trade of the Orient. We have undertaken to protect our citizens from improper treatment in foreign lands. We continue steadily to insist on the application of the Monroe Doctrine in the Western Hemisphere. Unless our attitude in these and all similar matters is to be a mere boastful sham we cannot afford to abandon our naval program. Our voice is now potent for peace, and is so potent because we are not afraid of war. But our protestations upon behalf of peace would neither receive nor deserve the slightest attention if we were impotent to make them good.

ARMY TOO SMALL.

"Within the last three years the United States has set an example in disarmament where disarmament was proper. By law our army is fixed at a maximum of 100,000 and a minimum of 60,000 men. When there was insurrection in the Philippines we kept the army at the maximum. Peace came in the Philippines, and now our army has been reduced to the minimum at which it is possible to keep it with due regard to its efficiency. The guns now mounted require 28,000 men, if the coast fortifications are to be adequately manned. Relatively to the nation, it is not now so large as the police force of New York or Chicago, relatively to the population of either city. We need more officers; there are not enough to perform the regular army work.

"Great progress has been made in protecting our coasts by adequate fortifications with sufficient guns. We should, however, pay much more heed than at present to the development of an extensive system of floating mines for use in all our more important harbors. These mines have been proved to be a most formidable safeguard against hostile fleets."

Exports of American Vehicles.—From January 1 to October 31, 1904, American carriage exports were in value $2,694,637. The exports for October alone were $195,179. Shipments of wheelbarrows and push-carts were valued at $25,734 in October, and for the ten-month period $270,015, a gain of more than 100 per cent. over the previous year's record.

Evolves New Fruits, Flowers and Grasses.

LUTHER BURBANK, of California, U. S. A., the wizard of horticulture, who is the discoverer of a rose that will not fade, a spineless cactus, the Burbank potato, the Burbank plum, a pear tree that will bear two crops a year and a host of other fruit marvels, has been awarded $100,000 by Andrew Carnegie so that he may quit raising seeds for a living and devote all his time to developing new fruits and flowers.

The award was made through the Board of Trustees of the Carnegie Institute at Washington, and the money will be given to him without any conditions in ten annual installments.

The latest discovery of Professor Burbank is a fadeless flower. This latest fad the professor declares to be a unique and beautiful plant, which grows readily in an ordinary garden soil, preferring sandy loam. It blooms early in the season and continues to bloom for a long time.

The fragrant flowers are of rosy crimson shade, sometimes approaching pure white. They are produced in large, graceful clusters, which, when cut, will retain their form and color permanently. The full-grown plants are about one foot high. Though the stem of the flower may dry up, the blossoms do not fade. Professor Burbank has a cluster of these blossoms in his library which have remained there for a whole year. Neither do they lose their odor entirely.

Professor Burbank has also evolved two new grasses, one of which will grow on the arid plains without irrigation, and the other under water. Among his other achievements are a thornless cactus and a stoneless plum. The latter was produced by crossing the prunier sans noyeau, a fruit that had been known as a curiosity for a hundred years, with the French prune and other plums. It took ten years to get results, which showed themselves in sweet and sour damson-like fruit of all sizes.

In describing the success of the experiment Mr. Burbank said that, like several other hybrid seedlings, this new and really first stoneless hybrid plum resembles and even surpasses its staminate parent, the French prune, in size, and resembles it in general form and especially in its enormous productiveness, but it has a much heavier blue bloom, thus resembling some of the German and Hungarian prunes.

Rice a New Article of American Export.

AMERICAN-GROWN rice has come to the front during the last year or two as an article of export, and, in spite of the fact that the crop is somewhat short this year and the price consequently a little higher, the export demand has shown a healthy increase. The principal growing section in the United States is in Louisiana, where there are large areas of swampy land which is ideally suited to the production of this crop. There have recently been large settlements of Japanese, who are skilled in rice culture and its preparation for market, in this section.

Three sales of American rice to Europe have recently been made in Louisiana, aggregating 11,680 pockets of medium-grade Japan. These shipments were to Rotterdam and Amsterdam, Holland, and Liverpool, and inquiries have been received from many other large European cities. There are excellent prospects for sales in Norway and Sweden and also in the south of Europe. American rice can be sold in Europe because our prices have sunk below the level of European prices. The European importation is 27,000,000 hundredweight per annum. The high-grade supply from Japan has been cut off, and the Indian supply has been curtailed by the Japanese importations and by the failures in some parts of India. The result has been increased price in Europe. It is believed by Gulf coast rice men who have investigated the subject that possibly a quarter of a million bags of rice can be disposed of in Europe at prices slightly above those now prevailing here.

Low prices have considerably increased the Porto Rican consumption, and this market has taken unusually large quantities this year. Rice men are anticipating tariff changes in Cuba that will enable them to unload enough rice in that market to relieve the domestic market somewhat, although it is not expected that these tariff changes will help the American market under normal conditions of domestic supply and demand. Some rice has already been shipped to Havana, and preparations are quietly on foot to ship large quantities as soon as the condition of the Cuban market justifies it.

The feeding of ground rice to stock is absorbing a vast quantity of low grades, and it is estimated that half a million bags of this crop will be taken out of market consumption by this measure.

Corn as an Article of Food.—Corn is the most valuable agricultural crop of the United States. The Government estimate of last year's corn crop is approximately 2,450,000,000 bushels, which at the present market price of 50 cents a bushel would make that crop worth $1,225,000,000. Not only is it increasing in use and popularity in the United States, but the fact that the Europeans are also learning to eat corn is pretty well evidenced by the export of corn to Europe that increased from 30,000,000 bushels in 1891 to 192,000,000 bushels in 1902, and on account of the present high price of wheat will probably reach much larger proportions this year.

New Orange Tree That Will Stand Cold.—An orange tree that will thrive in latitudes 500 miles north of Florida has just been developed by the plant experts of the United States Department of Agriculture. It is the result of crossing the Japanese tree with the best of the Florida varieties. The new tree, it is claimed, will live in a temperature of six degrees below zero, although it will not bear fruit.

Raw Rubber Advancing, Prices of Manufacture Low.

THAT there has been no very great advance in the price of American manufactured rubber goods is due entirely to the development of labor-saving devices and improved factory methods in this country. Raw rubber has been going skyward in price for the last three or four years, and manufacturers all over the world have had to pay twice as much for their raw material this year as they had to pay ten years ago. In some of the manufacturing countries the prices of the manufactured goods have almost kept pace with the increase in the price of rubber, but in this country, owing to the improvement in manufacturing methods, there had been only a very slight advance.

The highest price for pure Para rubber in 1880 was 50 cents per pound. The average price from 1885 to 1892 was 76 cents. The price in March, 1902, was $1.02. The price November 1, 1904, was $1.13, and prices in December ranged from $1.30 to $1.32½. These prices are all f. o. b. New York in car lots.

There are several natural reasons for this increase in the price of rubber apart from whatever manipulation may be present in the market. The small item of rubber heels to shoes has consumed quite a tonnage. Automobile tires call for the purest rubber in a larger proportion, compared with adulterants and fabric, than in most other articles. The widespread use of rubber tires for carriages and other vehicles consumes to-day a greater tonnage than the total importation of rubber twenty years ago. It is estimated that last winter no less than 60,000,000 pairs or rubber boots and shoes were manufactured and sold. The rubber industry is daily assuming larger proportions and greater importance, and rubber is finding its way into a countless number of manufactured products in which it was not used some years ago.

Rubber from an American Plant.

PERHAPS the problem of the decreasing supply and increasing demand for raw rubber will be solved by the discovery of a rubber-producing plant in Colorado. The extraction of the rubber from the plant has reached the commercial stage, for a great plant for the manufacture of the product is now being erected in that State. If the enterprise is successful Colorado will enter into competition in the markets of the world with the Amazon country as a producer of raw rubber.

The American Crude Rubber Company is at work erecting an extracting plant, power-houses, stringing wires to convey the electricity from the power station and on the construction of a street railway. It is the expectation of the company to have much of the work, if not all of it, completed by the middle of the summer. The company is satisfied with the experiments it has been conducting. Exceedingly gratifying are the reports sent in to them by Prof. J. C. Paine, who has been since early last spring investigating the possibilities of the rubber plant under different forms of cultivation. He has demonstrated beyond a question that the weed can be made to yield a greater abundance of gum under cultivation.

There is now growing wild in Colorado enough to keep 1,000 men busy picking for a year. The cost for the erection of buildings and machinery for the extraction of the gum from the roots of the weed as laid out by the company will reach $150,000.

International Parcels-Post Discussion.

THE Post-Office Department of the United States Government is preparing for its part in the Universal Postal Congress, which will be held in Rome during the coming spring and at which the United States will be represented by former Congressman E. F. Loud, of California, who, although a postal expert, is one of the most persistent opponents of the plan for the extension of the parcels-post system.

Concerning the work of the Department and the plans for the extension of the postal service both at home and abroad, Second Assistant Postmaster-General Shallenberger said in a recent interview:

"The Universal Postal Congress will meet in Rome next April and will discuss a variety of important topics. One of the most interesting will be the subject of a universal stamp to facilitate international correspondence. This will be of great interest to small importers both here and abroad and others making inquiries of manufacturers and merchants in other countries than their own. Several countries of the postal union have recently addressed communications to the United States, notably the Netherlands and France, suggesting various forms of prepaid reply missives. Some objections can be named against the successful practical operation of a universal stamp, and as well against any reply missive which depends for its prepaid postage on the use of a stamp printed and sold in another country. Every country is supposed jealously to guard its right to receive cash in advance for the service it undertakes to perform in mailing a letter, especially when that service may involve the payment of cash to an intermediary as a transit charge for conveyance.

"Appreciating these considerations, I have suggested a plan which requires that every reply letter shall have upon it a stamp of the country in which it is mailed, and yet a stamp that may be conveniently paid for in the country which has invited the reply. My plan in brief is as follows: Each country to prepare and sell special government envelopes of light weight and good quality, to be entitled 'international reply postage envelopes,' to be sold for 10 cents, or 50 centimes, each having one 5-cent stamp, or its equivalent, embossed on the upper right-hand corner, to be canceled when mailed, and a similar stamp on the left of the envelope to remain uncanceled, the first-named stamp to pay outward postage, half-ounce weight, the last-named to render the envelope, when relieved of its inclosure, good for the purchase of a reply stamp of like value at any post-office in the country of destination, postmasters to be instructed to take credit for these envelopes in their stamp account and to forward them to the central office to be redeemed for cash by the country of origin in accounts between the two countries. The practice which has long prevailed in this country of exchanging for stamps of like value government envelopes which have been spoiled in addressing or otherwise suggests administrative details which are entirely practicable. It is believed that the use of these envelopes would greatly stimulate international correspondence, fully protect the revenues of the several countries, and be found a very great convenience to an ever-increasing number of people who desire to prepay replies to correspondence.

"For some time past the Post-Office Department has taken the position that the domestic rate of postage—namely, 2 cents per ounce or fraction thereof—is sufficiently high to pay the cost of international handling. The foreign rate is now 5 cents for each half ounce, and hence a letter weighing one ounce, which could be sent to any part of the United States or to any of our remote possessions for 2 cents, is charged a rate of 10 cents if sent to England. The social and business relations of the people of this country with those of the leading European nations have grown to such an extent that it is believed the time has come to reduce the foreign rate of postage, the present rate being considered excessive and a hindrance to the development of commerce and trade. It has therefore been recommended that negotiations be undertaken with Great Britain, Germany and France for the purpose of modifying the rates of postage, believing that correspondence will be stimulated to such an extent that within a short time the increase of the interchange of communications would bring greater financial returns than can be obtained from the present rates.

"I have been asked as to whether any of the delegates to the coming congress will be apt to protest against the policy of the United States in cutting down the limit of our parcels-post conventions with European countries from eleven pounds to four pounds six ounces. In reply I would say there can be no doubt that certain foreign countries regret the step we have taken, but, nevertheless, we have been moved by sound business considerations, and it is universally conceded that the weight limits of parcels-post conventions are matters for independent negotiations and cannot be fixed as the result of a universal agreement, but must fit each case according to the conditions presented.

"The most important point we have to keep in mind is the bearing of our parcels-post treaties upon our own mail system, and especially upon the subject of a domestic parcels post. The parcels-post convention which we negotiated with Germany about five years ago was in the nature of an experiment, being the first convention concluded with any of the principal countries of Europe. After being in operation for three years the department decided that the weight limit was too high, and accordingly reduced it by a notice given about eighteen months ago.

"From statistics gathered by the Department it appeared that the average weight of parcels dispatched from this country to all countries slightly exceeded three and one-half pounds, and that the average weight of parcels dispatched to Germany was two and two-third pounds. Now, the domestic postal service does not permit the introduction of parcels more than four pounds in weight; therefore, in view of the fact that four pounds as a limit of weight would fairly meet the requirements of this country, I recommended the tender of parcels-post conventions to England, France, Italy and other countries of Europe similar in terms to that in force with Germany, with the exception that the weight of parcels be limited to four pounds."

Grinding Feldspar for an Abrasive.

OPERATIONS have been begun at Duluth, Minn., on a large scale in the grinding of feldspar for abrasive purposes. It has been found that this material makes a splendid abrasive, and it will be sold in large quantities to manufacturers of sandpaper and other users of abrasive material. The company which has begun operations owns a large cliff of the rock rising from deep water on the shores of Lake Superior and situated in such a way that the cost of mining and handling is reduced to a minimum.

There are millions of tons of feldspar in the cliff. A dock has been built a few feet out from the bank, into deep water, and a mill erected so that the rock can be mined, dropped into the mill, crushed and dropped down by gravity to the dock warehouse. An active campaign will be carried on the coming winter in selling the product to sandpaper works and other abrasive manufacturers, and it is probable that the works will be operated heavily during this year.

There are many great cliffs of feldspar in northeastern Minnesota near the lake, but no others are so close to the shore and so well suited for cheap handling. The report has been published that these deposits are corundum, but this is not correct. They are a high-grade feldspar and valuable for many abrasive purposes, for which corundum is too costly. This material can be sold, prepared for the market, at a very low price.

A Machine for the Improvement of Fence Building has been invented by a resident of Tennessee, and is now being manufactured there on a large scale. The machine manufactures a looped wire to hold the rails from ordinary wire and is attached to one of the posts as the fence is being built. The rails are held securely in the loops, but are so arranged that an entire panel can be easily removed at any time.

Wrecking the St. Louis Fair.

ALMOST as great a task as the construction of the buildings and plant of a great international exposition is the task of wrecking and removing the buildings when the Fair is finished, and the profitable disposition of the great mass of material which has entered into their construction. A Chicago (U. S. A.) contracting company has been awarded the contract to remove everything on the St. Louis Fair grounds except the trees, and has paid to the Exposition company about $500,000 for the privilege. In addition to this it has entered into contracts with the various American States and the foreign governments which owned buildings on the Fair grounds for their removal, and has also contracted to wreck most of the private buildings. Work has already begun, and before the new year is many months old the great $50,000,000 ivory city will only be a heap of junk and second-hand building materials. The magnitude of the task and variety of materials that will be sold are shown by the following figures:

Lumber and Finished Articles.—100,000,000 feet of lumber, 1,000,000 square feet of sash, 4,000 doors, 1,250,000 square feet of skylight, 1,585,000 square feet of roofing, 500 staircases. metal and wood, and several hundred carloads of telegraph poles and fence posts.

Iron and Steel Articles.—50,000 feet 4-inch cast iron water pipe, 50,000 feet 6-inch cast iron water pipe, 10,000 feet cast iron water pipe larger than 6-inch up to 36-inch diameter, 500 carloads wrought iron and steel pipe, $500,000 worth copper and steel wire, including trolley wire; 10,000 feet iron fence, 8,000 tons rods, bolts, washers, etc.; 6,000 tons 60-pound steel rails, 2,000 tons lighter sections and 2 11-foot steel stacks.

Plumbing, Steam Fitting, etc.—1,700 closets and lavatories, $500,000 worth 8, 10 and 12 inch gate valves, and thousands of filters and coolers.

Fire Apparatus.—The complete fire protection service of the Fair will remain in operation under the ownership and control of the purchasers of the Fair until such time as fire protection is no longer necessary, when the equipment will be placed on the market. This will probably be some time next summer. This equipment includes, among other things, 4 chemical hose wagons, 5 fire engines, 10 deluge sets, 100,000 feet hose, 1½ to 2 inches diameter; 100 revolving standpipes, automatic sprinkling system in two large buildings, 5,000 galvanized water buckets, and 12 18 x 12 x 10 inch Worthington underwriters' pumps.

Electric Lighting Supplies.—One of the items that cost the Exposition company the largest amount of money was the equipment of the lighting service. This throws on the market 100,000 electric lamps never used, 350,000 electric lamps used, 250,000 lamp receptacles, and millions of yards of lamp cord.

Machinery.—The list of machinery sold to the wreckers has not yet been tabulated, but it includes some of the boilers and engines used to furnish power for the Fair, as well as 75 motors from 100 to 500 volts; 2 traveling cranes and a vast amount of hoists, tackle, blocks, chain, trucks, scales, safes, etc.; several electric passenger elevators, 6 road rollers, 15 sets of architects' and surveyors' instruments, 200 electrical turnstiles, 50 dump wagons and hand cars, 60 other vehicles, 500 lawn mowers, 500 wheelbarrows, and the like.

As a matter of curiosity it can be stated that the wreckers also have the problem of disposing of 5,000 flags, 2,000 feet of burlap, 2,000 army cots, 2,500 opera chairs, 25,000 kitchen chairs, 2,000 iron beds, mattresses and hospital equipment, 300,000 flower-pots and the buildings and contents of the vast greenhouses at the Fair grounds.

Of course, the largest item on the list is that of lumber, and the company is rapidly installing sawmills, planing mills and other machinery for working up this lumber into merchantable shapes and sizes, including plans for converting into salable kindling wood of several million feet of lumber that will not be available for the lumber trade. The announcement that the cast-iron pipe laid at the grounds is to be placed on the market will be received with surprise by many of our readers, as it was understood that at the time the sale was made to the Exposition company it contained a provision prohibiting the sale of this pipe as scrap, the intention of the sellers being to avoid a repetition of the demoralization of the pipe market which followed the World's Fair at Chicago.

The Ferris wheel is being taken down and will probably be erected at some pleasure resort, though a definite contract has not yet been closed. In case this is done it will be the fourth time the wheel has been erected—namely, first, at the World's Fair in Chicago; second, at a resort near Lincoln Park, Chicago, and third, at the World's Fair, St. Louis.

The wreckers are compelled by their contract to do much of the work incident to restoring the grounds to their original condition, including the uncovering of the De Pere River, which was planked over during the Fair. This stream ran under part of the Pike, and many of the buildings along that thoroughfare were actually on bridges over the stream.

The wreckers have gone about their herculean task in a systematic manner. Even before the Fair opened they had in their possession lists of practically everything on the grounds, with the original purchase prices. These lists were made the basis of their bids and will be made the basis of their selling prices. The policing of the grounds after about March 1st will be in the hands of the wrecking company, and very rigid supervision will be exercised with the view of preventing incendiarism, which wrought such havoc at the World's Fair, Chicago.

Field for Agricultural Implements.—A great field for American agricultural implements is evidently developing in Argentina, South America. That country, which a few years ago was importing wheat and flour, is to-day exporting immense quantities of these and other agricultural products, and the acreage under cultivation is increasing every year. The Kansas City *Journal* says: "Thirty years ago it imported cereals from the United States, from Chili, and even from Turkey, but in 1902 the value of the quantity exported was $65,000,000, and according to all calculations it will exceed $100,000,000 in 1904. Argentina, with nearly 250,000,000 acres of land suitable for agriculture, has not even 10 per cent. thereof under cultivation. It has been calculated that in 1902-3 the area of land cultivated was 20,782,000 acres, of which 9,066,900 acres were in wheat."

World's Fair Medals.

ALTHOUGH the St. Louis Fair is now a thing of the past, it was not until after its close that the design for the medals to be awarded to successful exhibitors was decided upon by the Exposition directors and the announcement of these designs was not made public until December. All the medals are to be of bronze, so that the intrinsic value will be small. The gold medals will carry a thin plating of gold and the silver medals will be plated with that metal. They will be struck at the United States Government mint in Philadelphia, from designs by Charles Graflet, a designer at that institution.

The gold medal in connection with the grand prize award will be rectangular in shape; the gold medal will be oval, the silver medal will be perfectly round and the bronze medal will be square and unplated. This is a radical departure from the method used at past expositions, and is done for the protection of exhibitors receiving the higher awards, as it is easily seen at a glance at the shape of each medal to what class it belongs, no matter in what manner it may be plated by the receiver.

Each medal carries with it an official diploma, the diplomas having been already presented to exhibitors, but it is stated that it will be six months or more before the medals are finished and ready for delivery. The delay is due chiefly to the fact that each exhibitor's name will be engraved on each medal, together with a statement on the reverse of the reasons for which the medal is presented. The cost of the medals will be borne by the recipients.

St. Louis Fair Closes Its Doors.

THE great St. Louis Fair is now only a memory. On December 1st the lights were turned off for the last time all over the grounds by President Francis, who by this act signified that the Fair was closed forever. Since then the exhibits have been removed and a wrecking company has by this time almost completed the removal of the buildings.

The impressive closing day ceremonies, which included addresses, parades, receptions and other public functions, were witnessed by an attendance of 200,000 people, being the third largest attendance since the opening day. The attendance for the entire period of the Fair reaches an approximate total of 19,000,000 admissions, which aggregate in total receipts $10,000,000. While the attendance was considerably smaller than that of the World's Fair held in Chicago in 1893, yet the Louisiana Purchase Exposition exceeded all previous fairs in both magnificence and cost. The total expenditure amounted to about $45,000,000, which was nearly double the outlay for the Chicago fair. In a comparison of the total expenditure, with the estimated total receipts from all sources, the stockholders predict that the receipts will slightly exceed the expenses.

The three large fairs held in this country in the past decade represent a total expenditure of approximately $80,000,000, a sum sufficient to establish a permanent international exposition, in permanent buildings and of continuous educational influence. Such an undertaking has been talked of seriously in the halls of Congress, and the country awaits the establishment of an institution of this character which will take the place of the international fairs now in vogue.

Portland's World's Fair Is Nearly Ready.

HARDLY have the gates closed on the World's Fair at St. Louis when the news comes that the buildings for the Lewis and Clark Centennial Exposition, to be held in Portland, Ore., from June 1st to October 15th of this year are fast nearing completion. This exhibit, although not so large as some others, will be a World's Fair in every sense.

The centennial, which will be the first international exposition under the patronage of the United States Government ever held west of the Rocky Mountains, will demonstrate the marvelous progress of the Pacific seaboard. Five million persons live in the section of country which is directly interested in making the Exposition the true exponent of its development.

Portland is the principal city of the northwest coast, and has a population of 130,000. It holds extensive commercial intercourse with the whole world, the chief export commodities being lumber, flour and grain. The city does a wholesale business of $175,000,000 annually and the product of its factories was $50,000,000 last year.

The Exposition grounds comprise 402 acres, a part of which is on the mainland and a part on a peninsula, extending into Guild's Lake. Connecting the two tracts is a bridge which spans the lake. On it will be the "Trail," which will correspond to the "Pike" at St. Louis and the "Midway" at Chicago. The site is most beautiful and picturesque.

The Exposition when opened will represent an outlay of approximately $5,000,000. The largest participant is the United States, which has made an appropriation of $475,000. The State of Oregon has made an appropriation of $450,000. The Exposition company, which was organized and financed by the people of Portland, will expend $475,000 raised from the sale of stock and other sources.

Other States that have appropriated sums ranging from $10,000 to $35,000 are California, Montana, Idaho, Utah, Missouri, Washington, Wyoming, Nevada, North Dakota, Minnesota, Arizona, Virginia, New York and Massachusetts. The total State appropriations aggregate $560,000.

Foreign participation will be extensive. Installation of exhibits will begin in January and the advanced condition of the grounds and buildings insures a completed exposition when President Roosevelt presses the button on opening day.

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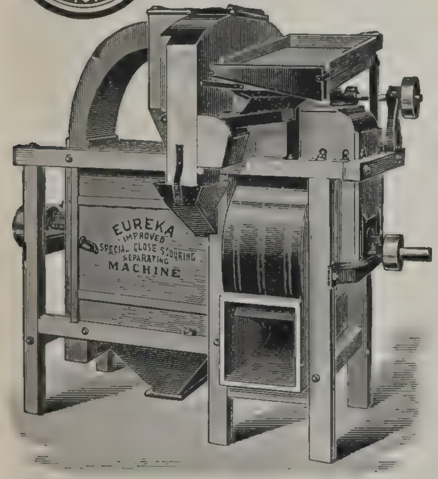

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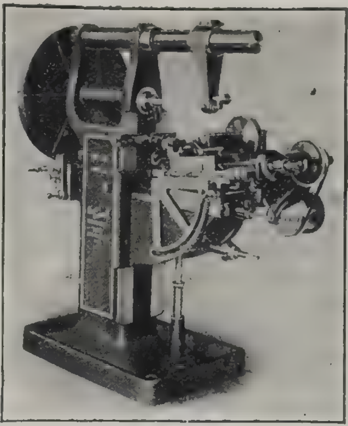

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The American Canning Industry.

WITHOUT a personal visit to one of the great canning establishments of the United States it is not easy to conceive of the results accomplished within the past few years in the expansion of this branch of industry by the aid of improved methods of procedure and of newly invented machinery. In the modern factory every operation, even to boxing, labeling and trimming of labels, is done by mechanical devices, run by steam or electric power.

Even as late as 1890 there were only 1,000 canning factories in America, with an output valued at less than $45,000,000. With the increase of export trade the number of establishments has increased to 2,500, while the value of the product has increased to over $100,000,000.

A catsup bottling machine is a more or less intricate piece of mechanism. A silver-lined pipe leads the prepared mixture from a large reservoir above and allows it to run into the bottles in a continuous stream as they pass beneath its mouth. From fifteen to twenty-one are filled at a time. As the bottles are filled they are corked by machinery and then placed by an operator in a conveyer, which passes them along to a capper, who dips them in melted wax and places a tinfoil cap on each. The conveyer then carries them through a sheet-iron tunnel, where they are washed by jets of water, which shower them on every side. They are then ready for labels.

Glass jars were gradually abandoned in favor of tin cans for various reasons. Glass was expensive, it was costly in transportation, it was less able to withstand the necessary extremes of temperature, whereas the only objection, though this was a most serious one, urged against tin was that the natural acids of fish, fruits and vegetables act upon it in such a way as to form metallic salts, or metallic compounds injurious to health. Upon careful investigation this objection was proved to be groundless when the best tin was used. But as the best tin is not always used some means had to be found of offsetting any danger of injury to health. An ingenious contrivance now in use provides against any chance of ptomaine poisoning. By this invention a lining of parchment, or some similar material impervious to any of the liquid exuding from the preserved comestible, is fashioned, in which the article of food is placed and which prevents it from coming into contact with the tin at any part. Until recently this method was generally employed, but it was expensive, as the labor of it must be done by hand, and it is still employed, but a new invention has been introduced by which both time and labor are saved.

By means of the new method a single operator can fashion ten linings a minute, or 5,000 in an eight-hour day. In a practical test it was recently established that one operator with this machine—which consists virtually of a plunger, plates between which the paper is placed and a cylindrical folder—can manufacture as many linings as sixty operators working by hand.

The cooking of fruits and vegetables for canning is now done in large copper kettles, having a steam jacket surrounding the lower half, which insures an even degree of heat. Any desired temperature can be obtained and the heat regulated to meet requirements. Formerly the method of cooking was in open kettles, and the highest temperature obtainable was that of boiling water. A little later a higher degree of temperature was secured by the addition of common salt to the water, and this was followed by the use of chloride of calcium, whereby a temperature of 240 degrees Fahrenheit could be obtained. Under this process, however, the cans became discolored, involving considerable expense in cleaning them; hence the copper kettles and steam jackets.

The tests to which the cans are put to assure their being hermetically sealed are numerous. Besides immersion in water and others, there is one curious enough to be worthy of mention. A workman beats a rapid tattoo on the ends of the can with a small piece of metal. The experienced ear of the workman detects by the variation in sound of a single blow when all is not right within. The work is done so rapidly that to a novice the occasional tossing aside of a defective tin is quite inexplicable.

The modern fish cannery is a huge structure, topping rows of piles driven deep into the river or ocean bottom. The fish are unloaded into it from boats by a sort of single-tined pitchfork and carried in automatic conveyers to different parts of the establishment. Oysters have recently developed an importance of their own in the canning industry, and of late years many improvements in machinery have been made, especially for oysters. Formerly oysters were opened by hand, with the oyster either in its natural state or scalded to make the "shucking" easier. Now great piles of oysters are shoveled into cars with iron framework, twenty bushels or more to the car, and run into a steam-tight box, fitted with appliances for admitting the steam at any desired pressure. The steam is turned on for about fifteen minutes, when the chest is opened and the cars are run into the shucking-shed. There a deft turn of a knife in the hand of an experienced operator will open an oyster with remarkable dispatch.

After being "shucked" the oysters are washed in cold water and sent to the filler's table, where they are placed in cans, weighed and sealed. Next the cans are lowered in a cylindrical basket into the "process-kettle," in which they are steamed, in order to kill all germs or fermentation. Cooling in a large vat of cold water follows, and the oysters are then transferred to the labeling and packing department.

Twenty-five million dollars' worth of preserved fish was the output of the fish canneries during the last year, of which the New England States contributed over ten, the Pacific States less than nine and Alaska about five million.

A "Commercial Missionary's" Views.

THE St. Louis *World* last month published a long interview with one of the most noted of the American "commercial missionaries," in which he gave his views on the wonderful expansion of our foreign trade and the best methods for still further increasing this expansion. Among other things he was asked for his views as to the value of great commercial expositions like the St. Louis Fair in fostering our export trade. He said:

"During the World's Fair at Chicago I was a resident of South Africa, as the manager in that country of one of our largest American industrial organizations, and returned especially to this country to visit the Exposition named.

"On my return to South Africa I was besieged with letters from local import houses in every part of the country for hints as to names and addresses of exhibitors, whose lines of manufacture I considered suitable for export trade from this country into South Africa.

"I was likewise besieged by newspaper reporters of the Cape, and the authentic information I was enabled to convey in such interviews assisted, and in many instances caused the introduction of many lines of our manufacture which have since become an important part of our American export trade, as an example our furniture, desks, beer machinery and small specialties generally, not only to the South African market, but to Australia, Oriental countries and to our neighboring Spanish-American fields. I only refer to the Chicago exposition to show its beneficial after-results to its exhibitors in the development of foreign trade, but it is absolutely essential that exhibitors with suitable export lines should follow up the initiative work of their exhibits by finding suitable means of keeping them persistently before foreign importers; otherwise the good work accomplished by exhibitors is lost more rapidly, as far as distant markets are concerned, than here at home, where it is so much easier to keep literature before prospective buyers.

"Expositions of the magnitude, grandeur, liberality and diversity of lines of manufactures exhibited, such as the one witnessed here, cannot fail to prove productive of excellent results in assisting in the rapid expansion of our general export trade, but I again reiterate the necessity of manufacturers securing the best means of personal correspondence direct with foreign firms interested in the exports from this country.

"It has been my experience that foreign buyers are greatly influenced in their purchases and show much more appreciation of awards of prizes granted exhibitors than may possibly be the case with American buyers; therefore, every manufacturer fortunate enough to secure awards at your Fair should let the world know it, and not be content with merely distributing his literature in this country alone.

"The methods of doing export trade, or exploiting the sale of our manufactures in foreign markets, is now quite a simple matter, and such of our manufacturers who enjoy a good export business prefer it to their domestic trade, since all foreign orders represent cash in this country.

"The custom duties in foreign countries do not concern our manufacturers here. There is very little manufacturing of any kind whatever in South Africa, Australia or Oriental countries, so, therefore, what these countries do not produce they must import, either from America or Continental Europe, and I may add that in machinery and in most other lines American productions are given the preference. Manufacturers consider themselves too small to exploit foreign markets, but if they take the proper means of getting into communication with the foreign importers they are naturally estimated as being larger than many of their powerful home competitors, who may possibly not take the proper means of securing export trade. Many manufacturers in this country produce a class of goods which only finds sale during certain seasons of the year; therefore, if they were to seek trade in South Africa, Australia and South America, where the seasons are the exact reverse of ours, they would find twelve months in each year of full activity."

England Likes American Goods.

UNITED STATES CONSUL MAHIN, at Nottingham, England, in a recent report describes the gratifying growth of the imports from America into his district as follows: "United States products continue in prime favor, and there is no sign of a decline in their use. Factories in this section are now making shoes on American lasts and with American machinery, and seem to be fairly satisfying the consumers, who prefer the shapely American styles to the broad, flat British patterns. Things American are in general and popular use. Much American office furniture is sold in this district, but practically no American house furniture.

"The use of boxes made of American shooks has grown to large proportions in this district. Great Britain is a peculiarly favorable country, the shooks being admitted duty free. American shooks were first used here in August, 1901. By January 1, 1902, 3,334 boxes had been certified at this consulate. In 1902 the number certified was 8,430; in 1903, 15,348."

Asbestos Shipped to Germany.—The American Asbestos Company, of Bedford City, Va., recently made a shipment of 100 tons of fiberized asbestos to Hamburg, and another order for 40 tons to the same place is now being filled. The mines are in Franklin County, Va., where the company has erected a $40,000 plant.

Steel for Australia.—The Cambria Steel Company has secured a contract from Australia calling for about 1,500 tons of structural steel, deliveries to begin in January.

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TRADE MARK

Smooth-On Iron Cement Rubber Packing is highly metallic, as shown by the cut of Magnet and piece of packing.

This feature insures durability and long life in service—and that makes it economical.

The Smooth-On in the packing has the same expansion and contraction properties as iron; this action makes a tight joint at all temperatures.

Send for catalogue and prices.

SMOOTH-ON MFG. CO.,

VREELAND TOMPKINS, - Chemist and Manager,

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IMPORTERS

In All Parts of the World:

We can offer you the exclusive agency for our "Kee Lox" hard, clean, non-grease carbons in your country, and we call your special attention to the fact that these carbons possess such superior merit that we know they are just what you have been looking for.

These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

Furthermore, the "Kee Lox" carbons improve with age, so that the longer they are kept in stock the better they become. Hence, they can be imported in large quantities at one time without risk of loss in deterioration of quality.

Samples and further information, together with our proposition, will be gladly furnished on application to the

Kee Lox Manufacturing Company,

ROCHESTER, N. Y., U. S. A.

A MOST WONDERFUL BARGAIN

(THE GREATEST EVER OFFERED)

—IN—

MEN'S CRASH SUITS

(COAT, VEST AND PANTS),

AT 95 CENTS PER SUIT.

EXTRA PANTS AT $5.25 PER DOZEN.

Pants, all sizes. Suits, 34 to 50.

A BARGAIN AT DOUBLE OUR PRICE.

MADE of an extra fine quality heavy cotton crash, elegantly made, every seam double-stitched; made strong and substantial; sizes, 34-50. We have about five thousand suits and five thousand pairs extra pants of these goods, and we have placed this very low price on them to make them sell rapidly. The goods used in these suits are worth more than we ask for the ready-made suit. The goods are perfect in every particular. Don't fail to take advantage of this special offer. Such a bargain is offered just once in many years.

The above is just one item taken from a Clearance Sale we are now holding. It will pay you to send us your name and address, so that we can send you a list of about one thousand extraordinary bargains in Men's and Boys' Clothing, Ladies' Waists, Jackets, Skirts, Petticoats, Suits, Corsets, Men's and Ladies' Hosiery, Handkerchiefs, Underwear, Shirts, Hats, Caps, Umbrellas, Etc., Etc.

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(*A. GARFUNKEL & CO., Props.*),

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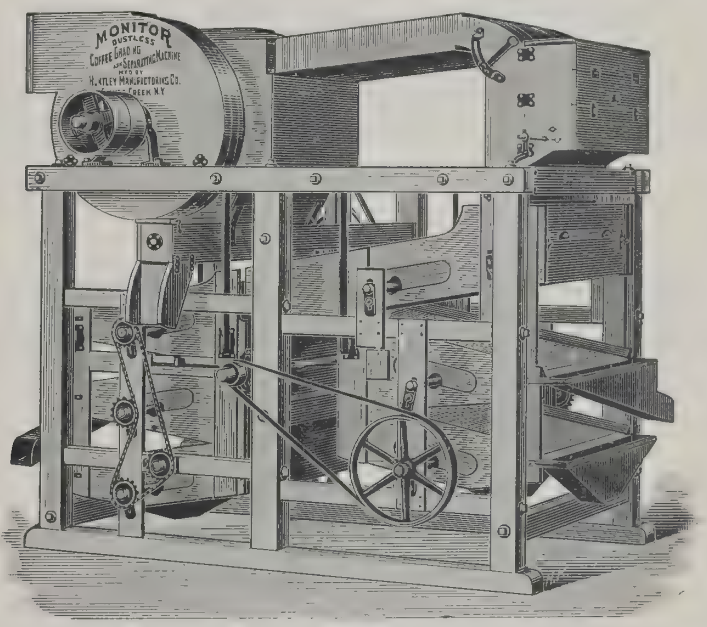
The Perfect Coffee Classifier.

MONITOR COFFEE SEPARATOR AND GRADER.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DUSTLESS
COFFEE GRADING AND SEPARATING MACHINE
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HUNTLEY MANUFACTURING CO.
SILVER CREEK N.Y.

This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

Monitor Grain, Cereal and Seed Cleaners are unequalled for quantity and superiority of work and low operating expense.

Send to-day for our Illustrated Catalogue of the entire Monitor line, with export prices F. O. B. steamship, New York City.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

Fancy Leathers for Shoes.

THERE has been a decided increase in the demand from both the home and export trade for fancy leather shoes during the last year, says the *Shoe and Leather Reporter,* and no field offers a better chance for the exploitation of fancy leathers than that of shoemaking. As a rule, Americans prefer plain black leather for ordinary wear, but the American woman has lately been evincing a preference for costly shoes made from rare and expensive leathers for special occasions. Mrs. Lars Anderson, of Boston, recently managed to crowd a thousand dollars' worth of value into an American-made pair of fancy slippers which she wore at a royal reception in London, and a St. Louis firm had on exhibition at the Fair a pair of slippers worth $1,000.

Of course, these are the exotics of the shoe trade, but there has sprung up a large demand for a beautiful and unusual slipper at from $3 to $5 a pair, and that demand is being supplied by the production of many new things in colored kid and calf.

Among the other novelties in the market in this grade of slippers is a Venus tie of robin's-egg blue glacé kid, with ribbons to match, and still another is an Ashley tie of burnt-orange ooze calf, with ribbon lacings, and also a gray suède slipper with silver ornaments. Other goods in this line are in gray, brown and red.

In boudoir slippers a considerable quantity of fancy leather is used, though the chief effects in these grades to-day are secured by the use of fancy cloths.

One novelty that a Lynn manufacturer put out last autumn was a high laced pigskin shoe. It retailed at $5. Another of his novelties during the past season was red and blue Oxfords, of a velvet leather made in Peabody. These goods sold well at the summer resorts.

Carriage boots, which retail at from $2 to $20, are a field for the artist in footwear and leather-making. They are made in all colors, and of all leathers from the plain blacks to the brightest scarlet and most fantastic snakeskins. One striking carriage boot is of seal leather trimmed with Japanese fur.

Snakeskin leather was a fad in footwear last year, but, strange to say, women did not take to it strongly. One Haverhill shoe firm, which has a splendid women's trade, is puzzled by the fact that it has never received an order for snakeskin slippers for women, though it makes thousands of them for men.

Possibly woman hates a snake since Eve's unfortunate adventure, and dreads the thought of having even a snakeskin beneath her feet. But snakeskin belts and purses are popular. Lizard, crocodile and alligator skin slippers also have their days of popularity, and frogskin slippers are a popular fad.

Japanese skins are just now one of the styles in footwear. Several firms are having a big run on popular-priced Japanese slippers. This Japanese leather is very costly. A Boston firm runs a line of fancy Japanese skins that sell at as high as $45 a skin. Haverhill shoe men have been buying considerable quantities of Japanese deerskins, a beautiful brown leather, which costs $1 a foot. Another Japanese leather that makes a beautiful slipper is a gold bronze calfskin.

Patent Leather an American Product.

JAPANNED leather, generally called patent leather, was first made in America, says the *Shoe and Leather Gazette.* A smooth, glazed finish is first given to calfskin in France. The leather is curried expressly for this purpose, and particular care is taken to keep it as free as possible from grease. The skins are then tacked on frames and coated with a composition of linseed oil and umber in the proportion of eighteen gallons of oil to five of umber, boiled until nearly solid and then mixed with spirits of turpentine to the proper consistency.

Lampblack is also added when the composition is applied in order to give color and body. From three to four coats of this are necessary to form a substance to receive the varnish. They are laid on with a knife or scraper. To render the goods soft and pliant each coat must be very light and thoroughly dried after each application.

A thin coat is afterward applied of the same composition of proper consistency, to be put on with a brush and with sufficient lampblack boiled in it to make a perfect black. When thoroughly dry it is cut down with a scraper having turned edges, when it is ready to varnish.

The principal varnish used is made of linseed oil and Russian blue, boiled to the thickness of printer's ink. It is reduced with spirits of turpentine to a suitable consistency to work with a brush, and then applied in two or three separate coats, which are scraped and pumiced until the leather is perfectly filled and smooth.

The finishing coat is put on with special care in a room kept closed and with the floor wet to prevent dust. The frames are then run into an oven heated to about 175 degrees.

Mexican Brick Plant.—American capitalists of St. Louis have secured from the Mexican Government patents securing to them for twenty years the sole right to manufacture a certain style of brick, the material for which is found near Mexico City, and arrangements are being made for large shipments of brick-making machinery from the United States. A brick plant, which is now in operation in Mexico City, will be taken over by the new concern, but additional machinery is to be purchased in the United States in order to increase the output to 40,000 bricks a day. The Mexican Central Railway is to build a track into the yards of the factory.

Imitating American Shoes.

TRIBUTE to the excellence of the American shoe and of American shoe machinery is paid by American Consul Ridgely, at Nantes, France, in a recent report, in which he tells how the French are making shoes to imitate the American product, with American shoe machinery. Mr. Ridgely says:

"Among the features has been the general appearance of shoes closely resembling the form and style of those made in the United States. The clumsy, ungainly and heavy French shapes are gradually disappearing. In their stead are coming gracefully cut and finely finished shoes of such a decided American appearance that one would think our exporters had begun to take possession of the market. The fact is, however, that it is rather our shoemaking machines than the shoes themselves that have come to France. In any event, the American-appearing shoes which are now quite generally seen in this city and elsewhere in the provinces are made principally in Paris with machinery imported from the United States, and I am informed that several great shoe manufactories there have installed American machinery. This does not alter the fact that some bona-fide American shoes are on sale here, but they are much dearer than the French-made articles, and it is not likely that they will make headway against the strong combination which is represented by cheap French labor and prolific American machinery."

Japanese Buying American Leather.

THE Japanese are adopting American footwear as well as American arms and ammunitions. They are discarding their straw sandals, wooden shoes, etc., with their fighting masks, fiber armor and other things of antiquity, and are rapidly adopting American products in their own reproduction of American goods.

Laichiri Doikawa, a Japanese shoe manufacturer, having completed his study of shoe exhibits at the St. Louis Exposition, is now touring the United States for the purpose of learning American methods.

Since the Russian fleet was put out of commission by Togo the Japanese have been heavy buyers of leather on the Pacific coast of the United States, and as many as six carloads of leather a day have been shipped from the Western tanneries to Japan. All goods are bought and paid for through consular agents. In New England the purchases of leather by Japanese agents have recently been so great as to be considered a cause for the advance in price of the commodity in the Boston and New York leather markets.

American Sheepskin Production.

ABOUT 55 per cent. of all the sheepskin produced in and imported into the United States is tanned in Peabody and Salem, Mass., says an authority on leather production, and while 60 per cent. of the skins so tanned are imported a large proportion of the finished products made from the skins are exported by the American manufacturers. The liberal drawback arrangements of the United States enable the manufacturers to meet foreign competition by securing on the exportation of the finished articles a refund of the duty paid on the skins.

The leather of the sheepskin goes into shoes of many kinds in one part or another. It also enters into the manufacture of gloves, sporting goods (such as footballs, boxing-gloves, basketballs and punching-bags), pocketbooks, card-cases, suspender finishings, book covers, upholstery, leather bags and valises. Those are the principal outlets for this kind of tanned leather. A lot of waste strips are used on toys of various kinds and for the bodies of dolls, etc. There are tanned at Salem and Peabody nearly 20,000,000 sheepskins annually.

American-Made Shoes for Australia.

THERE has been an increasing demand during the last year in the United States for shoes for the Australian market. The changes in the tariff of the Commonwealth have encouraged the importation of high-grade goods, and the manufacturers and shippers here report that the demand for their very finest products is increasing very rapidly among their Australian customers.

The shoes are made up in practically all the finer leathers, with glacé kid predominating, and comprising box calf, wax calf, tan glacé, Russian calf and many other fine leathers under various titles. Good, sensible, round toes characterize the majority of these goods, though they are ordered in the extreme shapes as well.

Big Order for Steam Turbines.—The New York Central and Hudson River Railroad has placed an order with the General Electric Company for 60,000 horse-power in Curtis steam turbo-alternators, consisting of eight units of 7,500 horse-power each. This will be, when completed, the largest steam turbine installation of any kind in the world and the first large steam turbine installation used for supplying the motive power over 300 miles of track now operated by steam locomotives.

American Paper Machinery for Africa.—A paper-making plant is being talked of for South Africa, William A. Haygood, manager of the South African Supply Company, of Cape Town, being at the head of the project. It is proposed to equip the factory with American machinery. Waste paper and rags will be used chiefly in the manufacture, as there are practically no native fibers suitable for paper-making.

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"Dole" and "Silver" Hub Boxing Machines.
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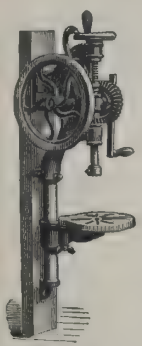
Fig. 742. No. 12.

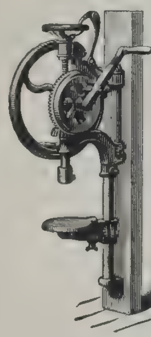
Fig. 731. No. 1.

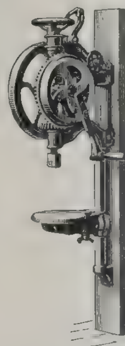
Fig. 732. No. 2.

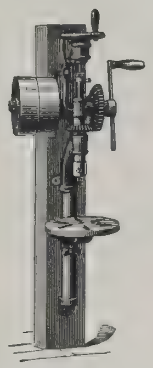
Fig. 746. No. 12

Four Leading Sizes of Blacksmiths' Drills.

WE HAVE 10 OTHER SIZES.

They are reliably constructed, light-running and work perfectly.

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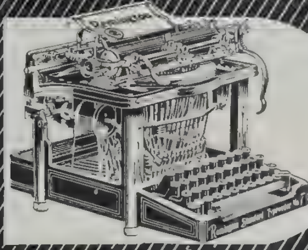

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Recommendations of our customers are our best guarantees.

CEILING, DESK and BRACKET types, for all direct-current circuits.

Write for further particulars, descriptive literature, prices, etc.

Our Standard Motor Book (20 pages), illustrating and describing fully our complete line of Standard D.-C. Motors and Dynamos up to 15 H.-P., cheerfully mailed for the asking.

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MANUFACTURERS OF THE CELEBRATED

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ROLLED-PLATE, FIRE-GILT, NICKEL

CHAINS.

Gents' Watch Chains in all varieties of style and length.
Artistically Designed Ribbon and Metal Fob Chains.
Ladies' Lorgnettes and Necklaces with gold and stone ornamentation.

HIGHEST QUALITY. POPULAR PRICES.
CORRESPONDENCE SOLICITED.

Order through any buying and shipping agent in New York or elsewhere.

American Autos for France.

THAT American automobile manufacturers will within three years be shipping high-grade automobiles to Paris, to be sold there in competition with the output of the French manufacturers, was the prediction made by E. R. Thomas, an automobile manufacturer, of Buffalo, N. Y., who is now in Paris, in an interview with an American newspaper correspondent a few weeks ago. For some time it has been a matter of general knowledge that the American automobile manufacturers were pressing the Frenchmen hard in other foreign markets, but that they will soon be able to invade the home of automobile manufacturing will come as a surprise to those not familiar with the wonderful development of the American machine. Mr. Thomas said:

"Undoubtedly the French were ahead of us at first in mechanical equipment and methods of construction. Labor here is 15 cents an hour; at home it is 22 to 25; but our workman's superior quickness evens this. Since we adopted French designs, beginning where they left off, we have been in a fair way to surpass them. The French had an early advantage, due to situation and accessibility of mechanism, but now we give more for the money, providing machines of 40 horse-power for $3,000, where for the same price they give 20. We build 400 at once on the chance of prospective orders, while the French build one at a time, following orders. The present demand here and at home is for high-powered cars.

"Mr. McKellner, the great carriage-body builder, declares he has orders for 200 auto bodies where he has two for carriages, and all with side-door entrances."

Auto Trucks for Furniture Delivery.

ONE of the most notable developments in American automobile manufacture has been the rise of the auto truck for heavy work. In this branch of manufacture Americans have excelled from the beginning, and the latest achievement is the auto truck specially built for furniture delivery and moving by a New York concern.

City delivery is not the problem that the big firms have to solve; it is the long-distance deliveries, and that is where the motor truck will work out a revolution in the delivery department.

To deliver a truck load of furniture forty or fifty miles away has been almost as expensive as to deliver one or two hundred miles away. But with an automobile truck an early start finds the run of forty miles soon accomplished. Only the ordinary packing, used when goods are trucked, is necessary, and in consequence of these time-saving methods the two men employed quickly accomplish the work of placing the pieces in their proper positions in the house, and soon the automobile is spinning back to its starting point, where it arrives just as fresh and ready for work as when it started out early in the morning, and can be put to work on any deliveries that are waiting. No tired horses to consider.

Lightness the Feature of American Street-Car Motors.

IN nothing, perhaps, has the ingenuity of the American electrical inventor displayed itself more than in the success he has achieved in reducing the weight of street-car motors. An arc lamp of fifteen years ago bears about the same relation to the modern light in weight and construction as the first car motors, and many of those now in use in the less progressive countries, bear to the American motor of to-day. Not only has the modern motor been constructed to suit the severe requirements of city service, but its efficiency and weight have undergone advantageous changes that yield excellent returns in a commercial sense.

It must be understood that the motor of a car is a heavy weight that pays no fare. It wears out and uses power to carry itself. It is an expense in every manner, and in some instances street railway companies claim that repairs eat up their profits. A light and powerful motor has thus far solved the problem, and the fares saved by reduced weight are saved again in the repair bill and coal consumption at the power station. A cut in weight of 500 pounds per car would mean in the case of 1,000 cars 500,000 pounds less per day to be carried around. This would mean the equivalent of 3,000 passengers, or an increase in profit of this amount for exactly the same output of power.

Electric Feeders for Steam Railroads.

A NOTABLE development in electric railroading, says the *Iron Age,* is the building of electric feeders for main lines on which the motive power is steam, and which will do much toward opening up and developing isolated and sparsely settled sections. A considerable number of such roads are planned for next season, both in the United States and Canada. New areas of country will be opened, including the wonderfully fertile irrigated valleys. Generally water-power ample to generate all the necessary electric current for the complete operation of such enterprises is to be had. The steam systems are in many instances backing the new electric roads, furnishing part or all of the necessary capital, for they see in these feeders a great business for their lines, economically delivered by means of power cheaply generated by water. It is stated that at least a dozen such lines are past the promoting stage in the States of Idaho and Washington, U. S. A., alone, and other States bring the total up to a considerably higher figure. A few of the roads will be about 100 miles long, and they range down to a score of miles.

Growing American Trade with Spain.

IN a recent report to the United States Government D. R. Birch, the American Consul at Malaga, Spain, writes as follows on the growth in the importation of American goods into Spain:

"At the beginning of the year 1904 a direct line of steamships from New York to this section of Spain was inaugurated by I. M. Ceballos & Co., of New York. Two 4,000-ton steamers, the Langford and Athalie, were chartered, and while they carry the Norwegian flag, the line is really American. The vessels ply only between New York and Spanish seaports. I am told that the freight business done so far has fully justified the enterprise.

"The establishment of this service is expected to go a long way toward the formation of a regular import trade in American goods. So far both steamers have carried full cargoes from New York. The ports of Santander and Barcelona benefit more from this service than the port of Malaga, as the stop here is not made until the return trip, the amount of freight for this port not often justifying a stoppage on the way to Barcelona. The line is a distinct advantage over others in that a transshipment of cargo is avoided.

"More American articles have been imported into Malaga during the first nine months of 1904 than ever before during a similar period. This is due in a great measure to the formation of the firm of Carrasco, Bachs & Co., for the sole purpose of importing American merchandise.

"Several classes of American merchandise never before imported into this section of Spain have reached Malaga this year. Among these may be mentioned automobiles, spirituous liquors, incubators, apparatus for shoemaking, paints and varnishes, sterilized milk, etc.

"Different patterns and makes of other American wares which have heretofore been imported into Malaga continue to come, but these are, as a rule, articles of small value, such as shoe polish, stationery, shoe leather, toilet paper, several classes of hand machinery, hams, lard, etc. Quite a market has been established, however, for such goods, and, especially in shoe polish, large sales are made.

"The American automobile has come and conquered. It must be considered a satisfaction for American 'auto' manufacturers to know that their machines have, in the fifth city of Spain, triumphed over the models of every other nation. There are now about a dozen autos in Malaga, half of which are of American build. Three more American cars are now en route, and I believe that other orders are about to be placed. In June, 1903, I reported that the possibility existed for the introduction of the American-made machine, and results have shown that it only remained for the first machine to make its appearance to insure future sales. The proportion of American autos sold here is all the more creditable when it is considered that our makers suffer because of lack of equitable tariff rates, owing to the absence of a commercial treaty between Spain and the United States. But the American machines seem to "take," and this success is due largely to their style and noiselessness, in addition to other good qualities."

Self-Propelled Railway Cars.

THE self-propelled railroad car is the latest development of American enterprise for which a demand has grown up abroad. It is used chiefly on small branch roads and "feeders" where the traffic is not large enough to justify the cost of the installation of steam or electricity. Recently a great English manufacturing firm ordered in America an oil engine and dynamo equipment, which will be used to generate power in cars of this type. The advantage of this style of equipment is that there is no cost for power when the car is not in motion, and that the car can be put in operation at a few minutes' notice.

The machinery is placed in a small compartment at the end of the car and requires but little attention. Such cars, driven by various forms of motors, have been found of especial value in England to bring passengers to main electric and steam lines, and it would seem as if there was an equal field of usefulness for them in other countries.

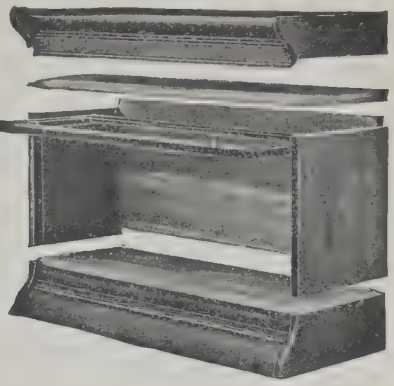
To Aid in Automobile Development.

ENGINEERS, designers and structural experts connected with the various leading automobile manufacturers of the country are about to form an organization, with headquarters in New York, to aid in the development of the machine. The organization will be known as Superintendents' and Engineers' Branch of the Association of Licensed Automobile Manufacturers, and its main purpose will be to study and discover methods whereby American machines may be simplified in construction and operation and cheapened in cost of construction and maintenance. The organization, it is expected, will place the results of its labors at the disposition of all the licensed manufacturers.

American Electric 'Buses for Peru.—The steamer "Hughenden," which sailed from New York last month, carried as a part of its cargo a shipment of electric omnibuses for Callao, Peru. The machines were valued at about $60,000, and are to be used for public passenger service in and around that Peruvian city.

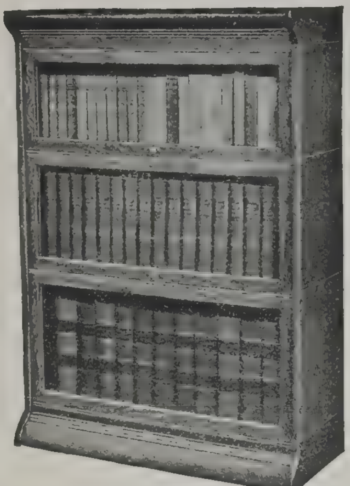
Lewis and Clark Exposition.—The order of the United States Government lifting duty charges from all imports for the Lewis and Clark Exposition has gone into effect. All exhibitors from foreign countries may now send their wares to Portland without paying customs duties.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) **construction.** It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6¾ cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10⅛ inches deep and 32½ inches long. Made of selected quarter-sawed oak and handsome polish finish.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

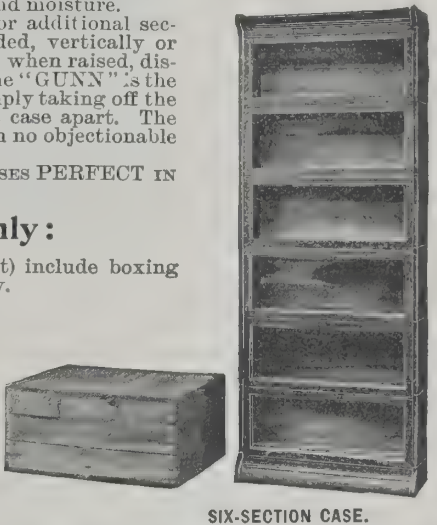
Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.

THREE-SECTION CASE, as shown, complete - - each $10.76
SIX-SECTION CASE, as shown, complete = = each $17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.



SIX-SECTION CASE.

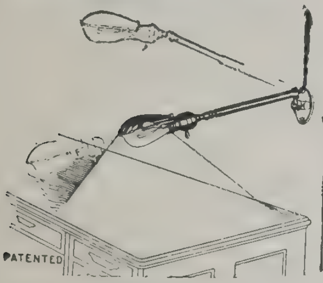
Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

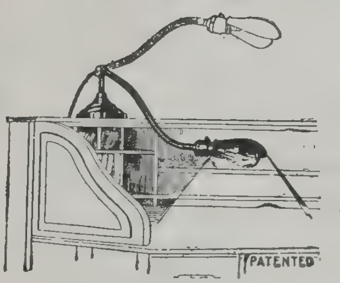
Western Union and A. B. C. Codes used. Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

ELECTRIC LIGHT FIXTURES



Style No. 40.



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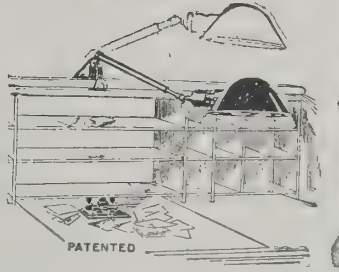

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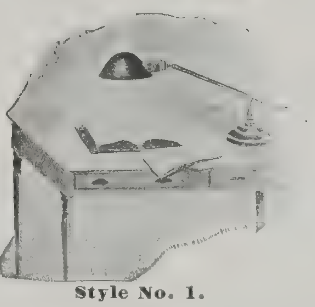
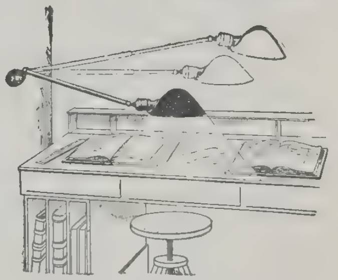


Style No. 1.



Style No. 290.

By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

WRITE FOR CATALOGUE AND DISCOUNTS.

WARREN BALL-BEARING FIXTURE CO., 4 WEST 15th STREET, NEW YORK, N. Y., U. S. A.

LITTLE'S STANDARD TYPEWRITER SUPPLIES,
LITTLE'S (Gold Seal) CARBON PAPER,
LITTLE'S BRILLIANT RIBBONS,
LITTLE'S COBWEB CARBONS,
LITTLE'S SATIN-FINISH CARBONS.

"Tried and NOT Found Wanting."

Used and recommended by leading mercantile houses and court reporters in all parts of the world. Send for Catalogue. Orders received through any New York exporting house at export rates.

A. P. LITTLE, Rochester, N.Y., U.S.A.

Manufacturer Standard Typewriter Supplies.

Beautiful Finish of American Wagons.

IT is universally conceded that the finish of American wagons and carriages is the finest in the world, but few persons who use them or who see them rolling past in the streets of American or foreign cities realize at what expense of skill and labor this fine finish is obtained.

It is the finish that really costs the money that the manufacturers ask for these wagons. Fourteen coats of white lead, paint and varnish are put on a well-finished wagon, and after each coat has been put on it has to be almost rubbed off again. First the plain wood, of which the body of the wagon is built, is smoothed off with sandpaper and made to feel like a piece of satin. Then a filler of lead is put on and rubbed well into the pores of the wood, and this is rubbed off again with powdered pumice-stone and water, leaving only what has gone into the wood. Two or even three coats of this filler is used until all the pores are well filled and then a coat of black is put on. This is only a coloring matter, and not like ordinary black paint, and several coats are put on and rubbed down until the body is well colored and is still as smooth as the original piece of wood.

When the wagon is properly colored the work of polishing it begins. A coat of varnish is put on, and when dried rubbed again with powdered pumice and water. Usually an old piece of felt is used to rub this fine powder with, and the man at work rubs and rubs until it would seem that all the varnish has been taken off. Then another coat is put on and treated in the same way, and coat after coat follows until a fine polish is obtained. Six or seven coats of this varnish will be put on and then the wagon is ready for the finishing coats. For this a fine quality of thin varnish is used. One or two coats of this will be rubbed down and the final coat will be put on quickly and smoothly and left as it dries. This coat puts the glossy finish on, and after being left for two or three days the wagon is ready for use.

If the primary coats are not well rubbed down and any marks or scratches or unevenness are left, these scratches will show through all the succeeding coats and will be on the wagon when it is finished, so that it is very important that the work should be started well.

It is very hard to repair any wagon that has been scratched or knocked. It is hard to match the color, even if it is black, for there are many shades of black, and the only way to make a wagon look well again is to take off all the enameling and paint and do it all over again.

American Carriages Lead.

AMERICA has driven the British carriage-maker from the export field. This is the complaint made by Hamlin Hamshaw, president of the Institute of British Carriage Manufacturers, at the annual conference recently held at Leicester. British export trade, he declares, has reached the vanishing point, and even the British colonial market has been captured by the American manufacturers.

"American push and progressive business system have driven us from our own markets," he said, "and the American even has impressed the indelible mark of his ideas on the style, shape and construction of the colonial carriages."

Mr. Hamshaw also complained that the American wheelwrights had even invaded England itself, and that the wheel trade in Great Britain had been practically stamped out by the importation of lighter, stronger, and in every way better wheels from America.

American Hosiery Going to Chemnitz.

CARRYING coals to Newcastle has become a classic expression for invading a market which has been preeminent in the production of the goods which the invader wishes to sell, but even carrying coals to Newcastle seems no less absurd than to export goods to Chemnitz, Germany, would have seemed a few years ago. Now, however, the superior excellence and lower prices of American hosiery have not only seriously curtailed the export market of the Chemnitz manufacturers, but the American goods have appeared in Chemnitz and are being sold in large quantities in competition with Chemnitz-made goods.

United States Consul Monaghan, at Chemnitz, in a recent report, says:

"The cheap machine-made American hose produced on a colossal scale and exploited by gigantic capitalistic enterprises, are already proving themselves dangerous competitors in all parts of the world, and, with some touch of irony, have even been shipped into Chemnitz to compete with the German hose on the Oriental market. It is hardly a year ago that a local enterprising dealer and shipper in textiles conceived the idea of taking up a good line of American hose and exploiting them for the Eastern markets. Since Chemnitz is a great meeting place for Oriental buyers, who annually pay a visit to the city in order to buy up stock for the coming seasons, it offered an excellent opportunity for pushing cheap American machine-made hose. It is said that the firm in question is doing a good and rapidly growing business."

American Steel for England.—The progress of the United States in the manufacture of steel products is shown by the placing of an order last month by the Great Northern Railway of England with the United States Steel Corporation for 5,000 tons of heavy rails. British steel-makers are much alarmed over this departure by one of the leading British railroads, and are talking of trying to bring influence to bear on the British railroads to make them stick to their home markets. There has been no suggestion, however, of meeting the American prices on rails.

Now a Coreless Apple.

THE American apple is favorably known all the world over and plays no mean part in making up the total of the year's exports. Now a Western horticultural genius has succeeded in producing a coreless apple, and arrangements have already been made to propagate it on a large scale in the great commercial apple orchards of the West. There are now 2,000 of the trees available for propagation, but it is estimated that in 1906 the growers will be able to put 2,500,000 young trees on the market. It is claimed for the tree that it is hardy and suitable for almost any climate where the old-style apple will grow.

The tree is described as blossomless, the only thing resembling a blossom being a small cluster of tiny green leaves which grow around the newly formed apple and shelter it. Being devoid of blossoms, it is claimed that the fruit offers no effective hiding-place in which the codlin moth may lay its eggs, which it usually does in the open eye of the fruit. Moreover, there is nothing to fear from the frosts.

The color of the new apple is red, dotted with yellow on the skin. As with the seedless orange, so with the seedless apple, a slightly hardened substance makes its appearance at the navel end. But this can be obliterated by culture. The originator of the coreless apple states that the further "we get away from the original five trees the larger and better the fruits become in every way."

Apple culture is more important even than orange culture. In the United States there are 200,000,000 apple trees in bearing, from which 250,000,000 bushels of fruit are annually harvested. In ten years these trees will give a yield of 400,000,000 bushels. At the present time the apple consumption of the United States is eighty pounds per head of the population per year. By bushel measure the American apple crop is four times greater than the entire wheat yield of Great Britain and Ireland. Billions of apple trees are grown in the orchards of the world, and millions of them are still being planted each year. The apple imports of Great Britain alone range between 4,500,000 and 5,000,000 hundredweight.

Machinery to Furl and Unfurl Sails.

CAPT. WILLIAM WILLIAMS, an old Californian sailing master, after having spent the greater part of his life in experimenting, has succeeded in perfecting a model of a sailing vessel where all the handling of the sails is done by machinery, and which if successful on a larger scale will probably have the effect of prolonging the life of the sailing vessel as an ocean carrier for many years. By the use of Captain Williams' apparatus one sailor can with ease do the work that now requires half a dozen, and do it much more quickly.

The invention consists of a set of winches at the foot of each mast whereby a single man, by turning a crank, can furl, unfurl or reef a sheet in one minute. The winches are so arranged as to take up their own slack by reversing cogs. The sheets work on sleeves, encircling the yard-arm. By slipping a brake the sheets unfurl themselves by means of a system of weights. Another feature of this device lies in an arrangement of winches on a bridge over the deck in front of each mast by means of which the yards can be braced, eased away or hauled around before the wind by one man working with a crank.

The winches displace the present tangle of halyards, and, besides saving more than half the labor, are invaluable in cases where the wind takes the vessels hard aback. Under the old system it was impossible to furl in these conditions. Under the new it can be done as easily as at any other time.

It takes twenty-four seamen to man a full-rigged ship. By using half the men, in adopting the Williams system, a saving of twelve men for one year at $18 a month would result in saving to the owner of the vessel $2,592 a year.

How American Tariff Will Be Revised.

IT is announced from Washington that there will be no immediate revision of the American tariff, as was expected immediately after the election. The plan determined upon now by the leaders of the protectionist party which is in power is the appointment of an unofficial committee of the party leaders, who with the assistance of one or more tariff experts will examine the present law and decide where it needs revision or amendment. They will prepare a bill which will be introduced when Congress meets next December and pushed through as quickly and with as little fuss as possible. The purpose of this method of procedure is to avoid, as far as possible, the business disturbance which always accompanies discussion of tariff changes.

Three rules will be strictly followed in the preparation of the new tariff bill: First, American industries must be interfered with as little as possible, and in pursuance of this plan whatever reductions may be made will be on goods which are not manufactured in this country, and which, therefore, do not enter into competition with American products; second, the inaccuracies and inconsistencies of the present law, due to changed business conditions, must be corrected; third, additional duties must be imposed wherever possible without hardship to the consumer, in order to maintain the revenue.

American Equipment in Mexico.—The Chihuahua and Pacific Railroad extension from Lajunta, the present terminus, to Temosachic, an important town eighty-six kilometers distant, is expected to be completed by next April. The materials are all on the ground now and construction will be commenced soon. The equipment, with the exception of the ties, is all American manufacture.

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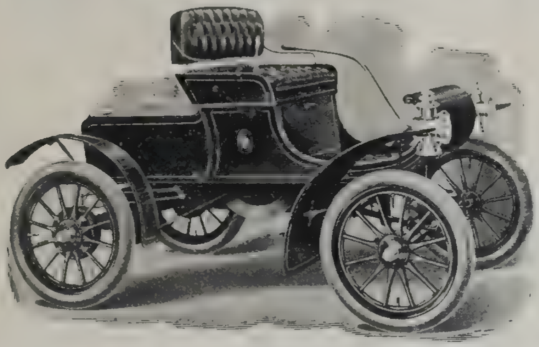

For 1905—as Ever—the Best Thing on Wheels.

Each season testifies to the enduring soundness of the mechanical principles upon which the first Oldsmobile was built.

EVOLUTION—Sound, Natural Development—Makes the 1905 Oldsmobile the 1905 Leader.

OLDSMOBILE STANDARD RUNABOUT,
OLDSMOBILE LIGHT TONNEAU CAR,
OLDSMOBILE TOURING RUNABOUT.

Awarded Gold Medal at the Louisiana Purchase Exposition at St. Louis, 1904.
Winner of Medal for Details of Construction and Ease of Manipulation at Hereford, England.

Write for "Book of Particulars."

OLDS MOTOR WORKS, Detroit, Mich., U. S. A.

Member of the Association of Licensed Automobile Manufacturers.

WHITE STEAM CARS
AWARDED
GRAND PRIZE
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SIMPLE
SILENT
RELIABLE
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EASY TO RUN
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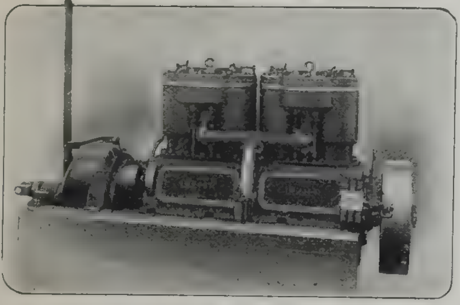
WHITE SEWING MACHINE COMPANY CLEVELAND, OHIO, U.S.A.

LOZIER

MOTOR BOATS,
MARINE GAS ENGINES,
MOTOR CARS.

Lozier Open Boat. 21 ft., 3 H. P. 25 ft., 5 H. P.

Motors, $200 to $3,000. Boats, $400 to $25,000.
Automobiles, $5,000 to $8,000, 5 to 7 passengers.



Lozier 4-Cycle, 20 H. P. Gasoline Engine.

MOTORS:

Two-Cycle,
3 to 15 H. P.
Four-Cycle,
20 to 55 H. P.

Catalogues on application, postpaid to all parts of the world.
Write for discounts.

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Develop Your Mineral Resources

THE PORTABLE
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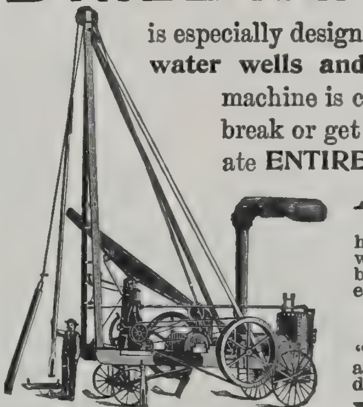
DRILLING MACHINE



is especially designed for drilling oil or gas wells, water wells and mineral prospecting. Every machine is complete, and is so built as not to break or get out of order, being made to operate ENTIRELY WITHOUT SPRINGS.

F. S. Gilbert, Cleveland, Ohio, writes: "I have frequently drilled 100 feet in 24 hours with my Star. It will doubtless make possible, in time, the cultivation of the arid western desert."

John Calkins, Newton Falls, Ohio, writes: "Have two of your Star Drilling Machines, and they take the lead of all others. I have drilled 76 ft. in 10 hours, 64 ft. of it in rock."

Star Drilling Machines are made in Ten Sizes.
Will Drill 250 to 2500 Feet.

They are the very best machines on the market. We also manufacture

Drilling and Fishing Tools.

Send for our illustrated catalogue.

STAR DRILLING MACHINE CO.
Akron, Ohio, U. S. A.

Cable Address:
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Use "A-B-C Code, 4th Edition,"
or "Universal Code of Lieber."

Electric Light and Power for Small Consumers.

THE growing use of electric light and power in small units by small consumers in the United States is full of suggestions for the people of other countries, and it must be borne in mind that this expansion of the uses of electricity has only been made possible by American ingenuity in the first place, and the great economy of manufacture which results from the American system of factory organization.

A few years ago electric lights were generally looked upon even in the United States as suitable only for public buildings and other places where expense was not considered, but to-day the man who has use for but a few lamps is finding that the electric light is not only safer, but better and cheaper. One finds even the bootblack stalls in the United States to-day with their complement of incandescent lamps, and electric fans. The small shops are putting in incandescent lamps, and places of entertainment which a few years ago were unpretentious and illuminated by gas and oil are now brightly lighted with innumerable electric lamps. We may mention one such place in New York, U. S. A., where there are moving pictures and other penny-in-the-slot shows, which has been converted into a dazzling palace by means of 2,500 incandescent lamps.

There is also a growing use of electric stoves and other devices of a similar character, which is not surprising if one remembers that, in addition to the convenience of an electric stove, it is economical, due to its method of use. It costs only 1 cent to run a chafing-dish or a tea-kettle for fifteen minutes. A broiler suitable for a family of five persons will broil a steak in about five minutes, at a cost of only about 1½ cents. A heating-pad costs only three-quarters of a cent every hour of its use. Doubtless, if the cheapness of this elegant method of cooking and heating becomes more generally recognized, its use will increase more rapidly.

Tribute to American Electrical Development.

HIGH tribute to American methods and progress in electrical development was paid at the annual dinner of the Newcastle, England, section of the Institution of Electrical Engineers. Referring to the recent visit of members of the institution to America, R. Kaye Gray, president of the institution, said that while Americans were accustomed to large talking about their progress in electrical science and manufacturing all that they said and claimed was perfectly justified, because any one who was familiar with electrical science must know how much good work they have done.

The success they had obtained, he believed, was due to the fact that they had on their side of the Atlantic large trusts controlled by men commanding large capital who developed vast enterprises. In Europe they had not the same thing, or, rather, they had not the same thing to the same extent. One would realize the opportunities of the electrical engineer in America, when it was well known that twenty trials were often cheerfully made to attain one success.

World's Biggest Locomotive.

THE heaviest and most powerful locomotive in the world has just been completed by an American firm of locomotive builders for the Chesapeake and Ohio Railway. This monster locomotive will do as much work as two ordinary locomotives, and while it was being built the works where it was under construction was a Mecca for mechanical engineers and railroad men from all over the world. The big engine is no experiment, as machines of the same type, but not so heavy, have been in use for years with entire satisfaction.

The big engine weighs 300,000 pounds on drivers, average working order, and 324,000 pounds full working order; it has a tractive power of 67,000 pounds, and will haul a trainload of 7,700 tons on level track. This would mean a train of 192 freight cars, say 60,000 pounds capacity each, and the length of the train would be 1⅛ miles.

The locomotive is built to perform the most severe service, it being guaranteed to haul 544 tons up a grade of 4.14 per cent., a rise of 219 feet in one mile. This is doing more than two ordinary locomotives of the largest type which we see in common service on our large trunk lines every day. This large-geared locomotive certainly deserves the investigation and consideration of any and all railroad men who have similar service to perform.

In a recent test near the works it pushed up a 3 per cent. grade a trainload of 705 tons, and after all the cars were on the grade started the train from a dead stop without slack and had plenty of power to spare. It could have taken a greater load up the grade, but the dock would not hold any more cars.

American Cars Completed in England.

ANNOUNCEMENT was made late in December in New York of a characteristic piece of American enterprise in securing foreign markets. The American Car and Foundry Company having secured the contract to supply a large number of cars for the Baker Street and Waterloo Underground Railway, is proceeding to the erection of a branch factory in England in order to save freight charges and expedite the delivery of the cars.

The impressive importance of the incident is that the company immediately after closing the contract acquired on November 29th a site on which to erect large car works—which will be more or less temporary in character, their permanency to depend on receiving additional contracts—and that the new shops will be erected and equipment installed and first delivery of finished cars will be made early in March.

The only portion of the work that will be sent from this country will be the iron and steel work, which will be exported in finished form. The remainder of the work will be done in England and will necessitate the employment of local labor on the current contract of between $75,000 and $100,000.

The new works are to be erected near Manchester, to take advantage of the cheap transportation of the Manchester Ship Canal.

American Electrical Machinery for Mexico.

AMERICAN capitalists have obtained three valuable concessions in Mexico and will begin construction work at once, using American equipment throughout, which will be shipped from California, U. S. A. The concession which will be acted upon first is that of an electric lighting plant for the city of Culiacan, which has a population of 20,000. All of the equipment and materials for the plants under this and the other concessions will be shipped from San Francisco. California redwood poles will be used throughout the systems, as the ants destroy other poles, including cedar.

Another concession is that for a local and long-distance telephone system extending throughout the State of Sinaloa. The third concession is for an electric street railway system in Culiacan and suburban electric roads.

The World's Greatest Reservoir.

THE construction of the Wachusett Reservoir, which is to supply the metropolitan district of Boston with water, marks the completion of the first part of the greatest water-works system in the world. The reservoir, though in purpose identified with the city of Boston and the twenty-eight cities and towns are its immediate neighborhood, takes its name from Mt. Wachusett, sixty miles distant, in the vicinity of which the two rivers which constitute its main source of supply take their rise.

Ten years ago, when it was found that the daily consumption of water in the city of Boston was 79,046,000 gallons, while the available daily supply was 83,700,000 gallons, the urgent necessity for an immediate increase was placed before the Massachusetts State Board of Health. Action was taken immediately and provision made by which work was commenced at once upon a system which was deemed to be adequate for a period of twenty years, but which embraced in its entirety a scheme for the construction of a system which would meet all demands for at least a century and for a period indefinitely longer. The immensity of what has already been accomplished may be judged from the ten years required for its construction, from the fact that the first completed reservoir is more than half again as large as any in the world, and that the capacity of this reservoir, assuming a population of 1,300,000 and a daily consumption of 125,000,000 gallons, is such that it would require nearly eleven years to drain it, if not a drop of water flowed into it. The second part of the plan of completing the system by a chain of reservoirs linked together by single and double conduits is yet to be undertaken, and it is estimated that the work will require fifteen more years at least.

The first part of the plan—that now finished—required almost as a preliminary step the uprooting of 1,900 acres of forest, the destruction or removal of 224 dwellings, with their barns and outhouses; six mills and factories, four churches, a hotel, two halls, a cemetery containing nearly four thousand bodies, the discontinuance of six and one-half miles of railway and twenty miles of highway and the stripping of the soil, amounting to 7,000,000 cubic yards, from 4,200 acres of land.

The reservoir has a storage capacity of 63,068,000,000 gallons—nearly twice as great as any artificial reservoir—yet not one-sixth of the capacity of the reservoirs which will be built on the Swift River to complete the system. The nearest approach in size to the Wachusett Reservoir is the Mira Reservoir, near Toona, India, the capacity of which is 41,000,000,000 gallons. The maximum depth of the Wachusett is 189 feet.

Improvement in American Shipping.

MARKED improvement is reported in American shipping during the last month, and freights, the best barometer of a lively export trade, are decidedly looking up. In some instances grain freights have advanced 100 per cent. during the last month.

Steamship agents say the improved conditions first showed themselves in a more active demand for grain space on the big liners. Now there is a good demand reported for both grain and general cargo, and steamships, the brokers assert, are once more running on a profitable basis.

The steamship lines are preparing to handle the large traffic by bringing out large steamers that have been laid up. The Steamship Trust will withdraw the small steamers of the Rhynland type from the Antwerp-Boston service and substitute the big Leyland liners.

As Ireland's potato crop is a failure, she is inquiring for grain, and a greater proportion of the grain engaged for shipment is being sent from New York than for some time.

A Mechanical Cotton Picker.—A new cotton-picking machine was recently tested in the State of Louisiana, U. S. A., in the presence of more than four hundred of the leading cotton planters of that State. Most of them were prejudiced against the possibility of a mechanical cotton-picker, but they were forced to admit that the new machine did its work well. If it proves a commercial success it will do much to solve the labor problem in the South and reduce the price of raw cotton. Five green negro cotton-pickers were seated on the machine and with the patent arm attachments each negro picked five to seven times what he was able to pick by hand.

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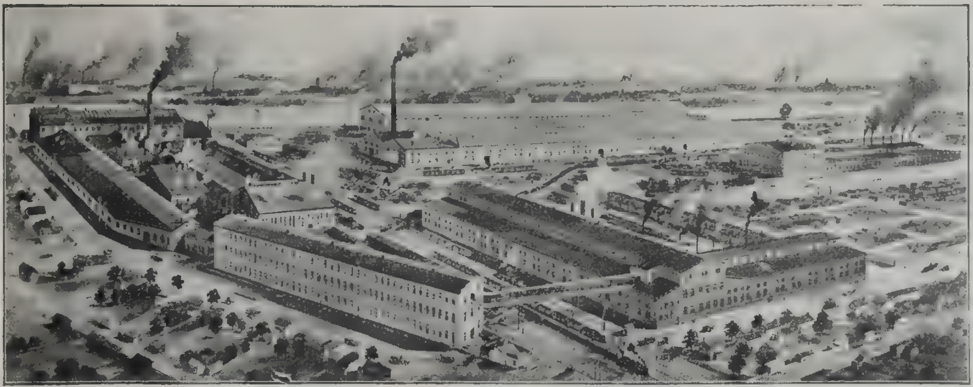
"Smith-Vaile"

Cottonseed, Linseed and Corn Oil Mills.

Air Compressors.

Steam and Power Pumping Machinery.



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Double Engine Tractions

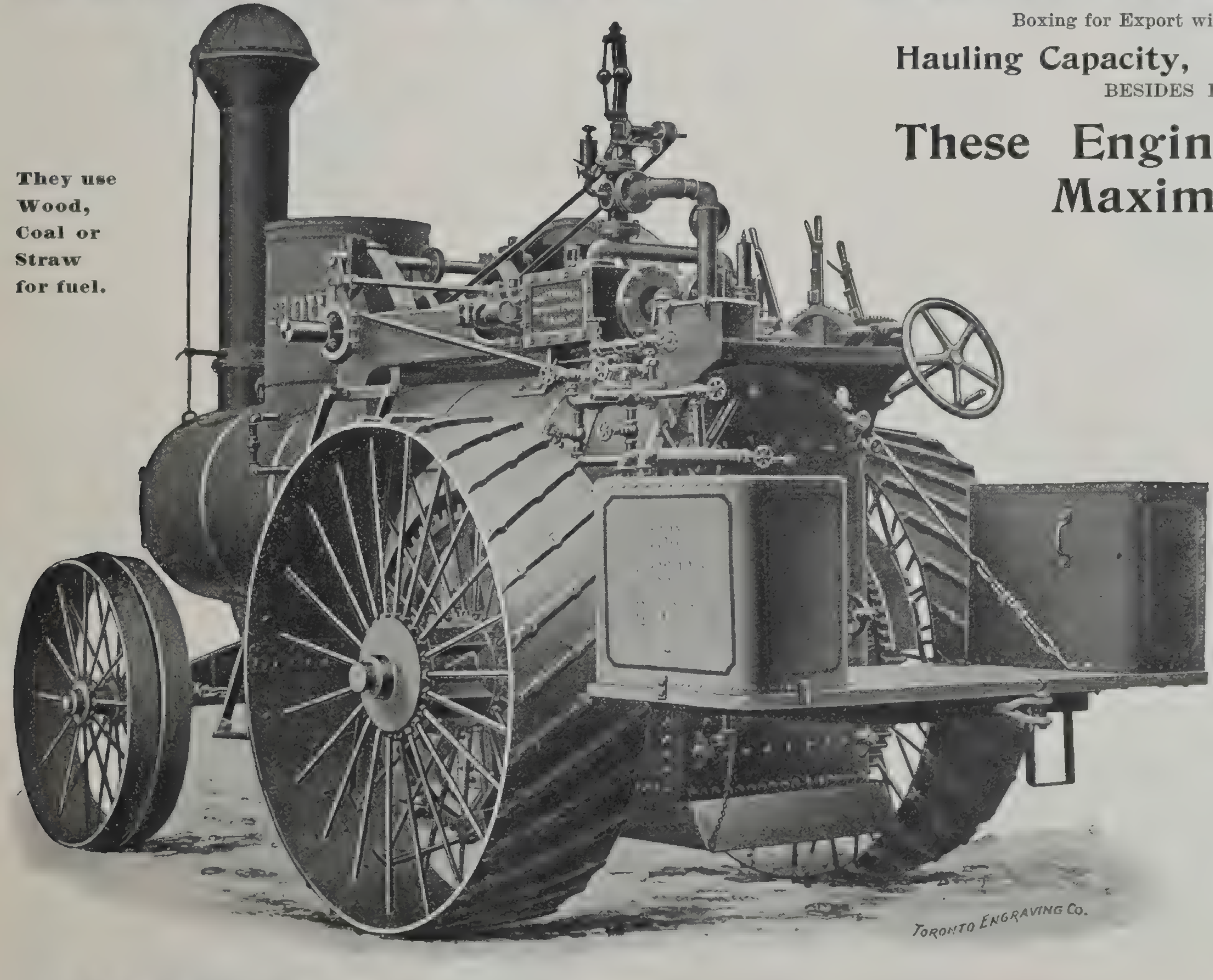
In THREE Sizes:

20 H. P.	-	Weight, 9½ Tons
25 H. P.	-	Weight, 10½ Tons
30 H. P.	-	Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, = 15 to 25 Tons,
BESIDES FUEL AND WATER.

They use Wood, Coal or Straw for fuel.


TORONTO ENGRAVING CO.

These Engines Always Give Maximum Power.

Where the reduced speed of a single engine will stall it, **the Double Engine walks right along.**

Wheels (22 to 28 inch face) shown are for Threshing and Plowing Tractions.

Special Wheels for Freighting.

Boilers are of ample size. With indifferent fuel under severest stress will blow off.

Engines on "belt-brake" show easily 40 to 60 per cent. increase in power over above rating.

WATEROUS, Brantford, Canada.

Representatives Abroad:

WM. FLEMING,	Sydney, N. S. Wales
NEIL CURRIE,	Santiago, Chili
MOFFAT, HUTCHINS & CO.,	Cape Town, So. Africa

Telegraphing with a Typewriter.

AN invention designed to revolutionize telegraphy, in that it practically does away with the Morse system, has been perfected, it is said, by the assistant general manager of the Western Union Telegraph Company, New York, U. S. A., and the first contrivance which was built by the company has been operated for some time.

Briefly, the invention consists of an appliance attached to an ordinary typewriter, by which the person sending in one city has his message printed by a similar typewriter in another city. Unlike any other telegraph printing inventions, the typewriter does not click off the Morse alphabet, but the sender writes his message before him just as an operator of a typewriter would do, and the printed message appears in exact duplicate on the typewriting machine miles distant. All that it is necessary to do at the receiving end, it is said, is to feed paper to the typewriting machine, or a roll of paper can be so arranged that it will unwind as the messages are received, and a boy can cut off each completed message as it is ended.

According to the inventor the sender needs to be only a typewriter operator to use the machine. At the sending end he has absolute control over the instrument and sees what he is sending just as a typewriter operator sees the letter he or she is writing. For long distances where "repeating" of messages is essential, the inventor says he has an attachment that makes it as easy to send from 3,000 miles as 500. Messages come direct over a circuit of this length.

"As far as speed is concerned," the inventor says, "this new instrument can beat the old method of telegraphy in just the same proportion that a rapid typewriter operator can beat a telegrapher. The sender can send as fast as he can write, and the machine at the other end will take it just as fast as he can reel it off. There is no necessity, as in other machines of the same class so far invented, to wait until the typewriter machine has clicked off the Morse characters. The Morse system is entirely eliminated.

"We are, of course, using telegraphers to send and receive messages over the one instrument now in use, but their employment is not essential to the success of the machine. I have no hesitancy in saying that the machine will cause something of a revolution in methods. It will be particularly useful to newspapers and big news agencies, which receive long messages and have direct wires from city to city, and within a reasonable time we expect to install these machines in such offices."

How Coffee Is Prepared for Market.

BUT few persons who handle coffee are familiar with the processes by which it is prepared for the market on a large scale. Coffee arrives in the United States in the raw state, and New York is probably one of the greatest coffee-roasting centers in the world. The New York *Herald* recently published an article on the processes of preparing the coffee bean for market, from which the following extracts are made for the benefit of the readers of THE AMERICAN EXPORTER:

When the coffee reaches this country it is already shelled, but the "pergomena," or little silver skin, still adheres to the kernels, and it is necessary to remove this before the bean can be placed in the roaster. A bag or more of coffee is emptied into a hopper, and then the beans are carried up in small quantities on a bucket elevator and dumped into another hopper, where they are given a thorough shaking. This is called "milling" the bean. The kernels roll out over a sieve about twenty inches wide, and probably three feet long, and by the time they have been shaken and rolled the length of this sieve there isn't a particle of foreign matter clinging to the beans which fall into another hopper preparatory to being run through the separator. This machinery is composed of a series of sieves, five sizes in all, and it divides the kernels into as many lots, according to their size—large, medium, small, flat and peaberry.

Now the coffee is ready to be shoveled into the huge roasters, which are run by electricity, and have a long row of circular gas jets on the inside of the cylinder. The exterior of these revolving cylinders is crossed with raised metal fences, put on in a zigzag fashion, so that as they turn the coffee rolls down from one and falls against another support, which keeps it constantly in motion, thus preventing burning or unequal roasting. Each roaster will do 400 pounds of coffee at a time, and it takes from twenty-five minutes to half an hour on an average to pull a roast of this quantity. The men in charge of these machines are expert in their line, and they know the exact second to remove the coffee, so that it will not be too green or too brown. They test the roasting beans as they come out of a leak in the cylinder with each revolution and they judge the state of the coffee partly by the brown tint, but more particularly by the smell.

The instant the roast is done the heat is turned off and the beans are poured into a large square cooling vat, which has a wire netting tray laid across it a few inches from the bottom. The roast as it lies in the vat is about six inches deep, and under the net tray a suction machine draws away the heat, thus cooling it by an artificial process, which prevents sweating. This is called "killing the cook." If such a large quantity of the beans were allowed to lie in a lump and to cool by natural methods the inner beans would retain the heat much longer than the others and would be made to sweat, with ruinous effect upon the coffee.

After this part of the process is finished the roasted and thoroughly cooled beans are carried in cars down on the elevator to the floor below, where they are put in bags, boxes and tins for the market. The coffee is then run along to a piece of revolving machinery, where it is poured into cans which hold about a pound, and just as soon as the exact weight, even to a bean, is poured into a can it is closed and another comes around to take its place on the scales. These weighing machines are extremely delicate and absolutely accurate.

From these cans the beans are dumped into the stoner, which removes stones that have gone through the previous steps on account of their resemblance in size and shape to the bean itself, and nails which may have been mixed in with the coffee during its journey through the warehouse and factory. A suction of air draws up the beans and leaves behind any stones, nails or heavy foreign matter that has not been taken out through the milling process.

The next step taken in this process is when the pound measures are poured into the final receptacle, cans or packages, sealed and labeled ready to be placed in piles by the girls who stand around the long table. Then it is ready to go to the retail dealer and finally the consumer.

Coffee in the green state costs about 9 cents a pound, and the roasting adds only half a cent to this amount, but the shrinkage of the bean during the roasting brings it up to 11⅜ cents. There is an average shrinkage of about 18 per cent.

There are from 150 to 200 blends of coffee, and as the crops change with every year these blends change too. For instance, the blenders must use a different proportion of Java with Mocha one year from another, the mixture depending on the part of the plantation from which the coffee comes. Coffee raised on a hill has an entirely different flavor from the same kind that grows in a valley, and coffee experts must be able to tell this from tasting the bean; it is their business to prepare the blend that will assimilate the various qualities.

A mixture of Mocha and Java is considered to give the best results. It is rather interesting to know that one year when the world's product of coffee was eighteen millions, fifteen millions of that came from Brazil, and yet the public had just as much Mocha and Java as ever. Recently very good coffee has been sent here from Peru and the Hawaiian Islands.

All the machinery used in this process of preparing coffee for market is, of course, of American manufacture.

To Aid the Coffee Trade.

THE Bureau of Plant Industry of the United States Department of Industry has taken up the study of coffee manipulation, with the idea of educating the people of the country to the knowledge that the method of preparing coffee has much to do with its excellence. With this end in view F. L. Lewton, an expert on coffee, has been engaged.

The view of the department which Mr. Lewton has set out to demonstrate is that a cup of coffee is good because of the manner in which it is brewed, rather than from the quality of the bean from which the beverage is made. It will be appreciated by all persons acquainted with the art and mystery of coffee-making that various conditions, apparently trivial in themselves, have to be taken into consideration in producing the beverage. For instance, in the process of roasting the beans may be more or less damaged by being under or over done and the flavor of the coffee thus impaired to a corresponding degree. Hence the necessity for ideal conditions in roasting. Again, the effects of water at various temperatures upon the ground coffee and the proper period for infusion will, for the first time in the history of coffee-making, be thoroughly and accurately ascertained.

To Push American Wines.

AMERICAN wine-growers are about to begin a campaign to teach the people at home more generally, what is already known abroad, that American wines are the equal of any in the world, and that in some districts of the United States they can be produced more cheaply than anywhere else in the world. The production of American wines has been increasing rapidly of late years, and America now boasts of some of the largest wine-making plants in the world. New York State has one champagne plant that is only surpassed in size by one or two of the famous plants of France, and California is producing still wines on a scale that is not equaled anywhere. One of the great California wine concerns has recently constructed one tank that holds 500,000 gallons of wine.

Large quantities of California wine are being shipped now to Europe, where they are used either in the condition in which they arrive there or blended with European wines. The Swiss wine-growers in particular are large users of California wines for blending purposes, and the Swiss grapes being very poor in sugar the quality of the Swiss wines has been very much improved since the use of the California product for blending was begun. Large quantities of American wines are sold in France and Germany, too, under French and German labels, and the native growers are thus getting the credit of their excellence.

One of the objects of the American Wine Growers' Association, which includes in its membership growers from all sections of the country, is to put a stop to this misbranding at home at least. The growers feel that the time has come when American wines, which are good enough to be sold under foreign labels, should be good enough to take the credit for their own excellence.

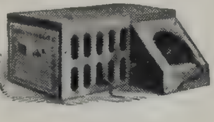
ANIMAL TRAP CO., ABINGDON ILLS., U. S. A.

The Largest Manufacturers of

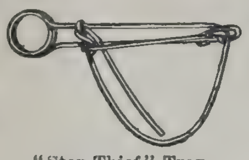
MOUSE, RAT AND GAME TRAPS IN THE WORLD.

Particular attention given to export orders. Illustrated catalogue free, giving full particulars. Order through your Exporter.

"Out o' Sight" Mouse and Rat Trap, also Imitations.

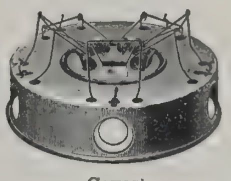


"Catch-'Em-Alive" Mouse Trap. Delusion Pattern.



"Stop-Thief" Trap, 4 sizes. For catching small fur-bearing animals.

Coxes' Self-Setting Wood Choker Mouse Trap. 1, 2 and 3 Hole, Square. 4, 5 and 6 Hole, Round.



Coxes' 5-Hole Metal Mouse Trap. Extra heavy. Well made.

Pennsylvania Rat Trap.

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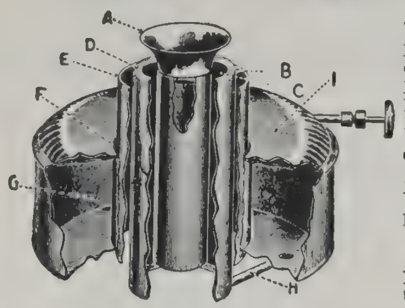
EQUIPPED WITH SAFETY BURNER.

No. 1—Brass burner; removable fount; 8-in. circular wick; height (bail down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular wick; height (bail down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (bail down), 28 inches.

SPECIAL $35.00 OFFER FOR FOREIGN MARKETS:

Upon receipt of $35.00 in U. S. gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29½.

OUR SAFETY BURNER. Note Construction.



A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

NOVELTY MFG. CO., Jackson, Mich., U. S. A.

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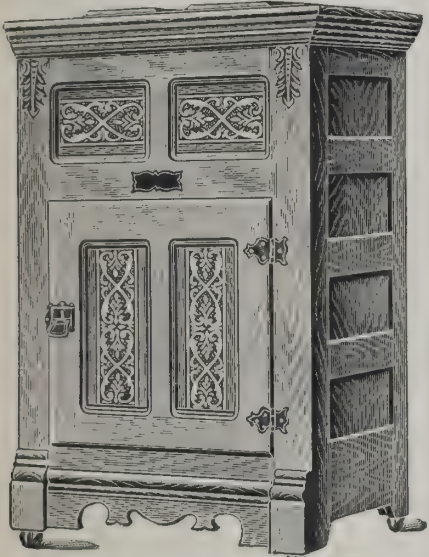


Chilkoot Refrigerator No. 0103.

None but the most skilled mechanics are employed, and none but the highest grade of material enters into the making of our refrigerators.

SPECIAL SAMPLE ORDER FOR EXPORT ONLY:

ECONOMIC REFRIGERATOR No. 204.

Solid Ash; Insulated with Charcoal Sheathing and Mineral Wool; Patent Adjustable Shelves; Zinc-Lined; Economy in Ice; Perfect Circulation. Net weight, 155 lbs. Gross weight, 240 lbs. Outside measurement, 38x19x42 ins.

PRICE, f. o. b. New York, $13.60.

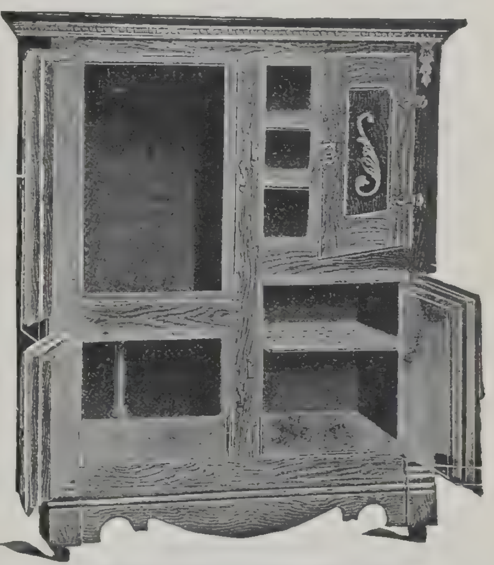
CHILKOOT REFRIGERATOR No. 0103.

Made with Hardwood, Golden-Oak Finish; Insulated with Charcoal Sheathing. Net weight, 135 lbs. Gross weight, 210 lbs. Outside measurement, 30x20x45 ins.

"The Best Low-Priced Refrigerator on the Market."

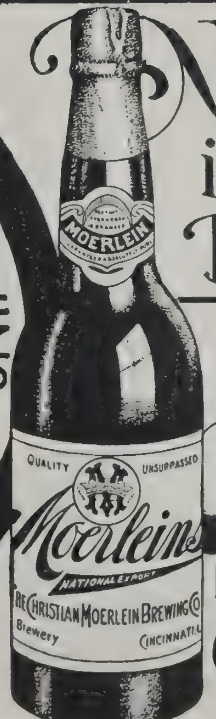
PRICE, f. o. b. New York, $9.40.

NOTE.—Our catalogue, illustrating and describing the various styles of REFRIGERATORS made by us, mailed postpaid.



Economic Refrigerator No. 204.

THE CHRISTIAN MOERLEIN BREWING CO CINCINNATI, U.S.A.



National Export

is the most exquisite Bottled Beer in the World

Moerlein's

Bottled Beers are the model for Purity and Healthfulness

THE CHRISTIAN MOERLEIN BREWING Co
CINCINNATI, OHIO.

Improvement in Logging Processes.

THROUGH the invention of a resident of Minneapolis the cost of lumbering has been greatly reduced by the elimination of much of the labor formerly required. The apparatus is adaptable to any climate or any country, and can be used at all seasons of the year. Its effect is in brief to introduce the use of mechanical power to take the place of men and horses in the woods. It is said to be suitable for use in the valley, the plain or on the side of the mountain. As described by the St. Louis *Lumberman,* the process and appliances are as follows:

"The first detail of the system, to begin with the first step in logging operations, is the mechanism, driven by compressed air, which saws down the trees and then cuts them up into logs. This consists of a cross-cutting saw, adjusted to an arm, which is fitted with a system of cylinders and pistons, acted upon by compressed air. The saw is brought to the tree or the log, by what is known as the shotgun feed action in sawmills, only in this instance the saw is brought to the log instead of the log to the saw. The entire mechanism is mounted upon a truck or sleigh, of the ordinary size. This is hauled to the tree. The saw is then speedily adjusted to any angle desired to attack the tree, and after it is felled the saw is moved alongside and the tree is quickly sawed into logs. There are movements and combinations of positions which permit the saw to adjust itself to a large tree standing on a side hill, on the level ground, or down in a declivity. These changes of position are made without the least hindrance, and can be secured almost instantaneously. The compressed airtanks are supplied by a gasoline engine, and these are mounted, together with the saw, upon the same vehicle.

"The log hauling and skidding device is a combination of a steel cable and pulleys, driven by steam. For hauling logs a steam upright engine is set upon a sleigh. The drive-wheel is also mounted upon this sleigh, and is directly attached to the engine. A steel cable is made fast at each end of the logging road, along which the haul is made. This cable lies along the middle of the road, passes up under the sleigh and is coiled four times around the drive-wheel. When this wheel is set in motion by the engine, the slack in the cable ahead of the sleigh is immediately taken up, and the sleigh pulls itself forward. The same thing takes place to the rear when the engine is reversed, and the sleigh then moves forward. The sleighs bearing the logs to be hauled are coupled to the locomotive sleigh, in the same manner as a train of cars, and the entire train moves easily along the road to its destination. About the curves the cable is kept in its place in the middle of the road by a system of trips, which drop down and permit the sleigh to move over them. The engine is of 35 horse-power. It requires 8 horse-power to move the machine, all fueled and watered to run, thus leaving 27 horse-power for the load. For skidding the engine is made stationary, and the cable is converted into a live cable by passing it about a system of upright rollers, stationed at the angles. This cable is carried about in the woods where the logs have been cut. By means of a clamp the short chain, which is attached to the log, is fastened to this live cable and dragged to the skidway."

Mosely on American Prosperity.

"THE present high state of prosperity in the United States, wonderful as it is, is but the beginning of still greater achievements; and that country, full of natural resources such as she possesses, is now only beginning to feel the effect of the accumulated wealth of the nation and of her scientific and practical system of education, which brings in its train sobriety and ambition. Like all other countries, she must, of course, be subject to fluctuations, some, perhaps, even violent, but her progress will be steadily and rapidly upward, and the phenomena one sees there at the present time are but the prelude to commercial and idealistic achievements during the next generation that may fairly stagger humanity!"

This is Sir Alfred Mosely's verdict of this country, after studying it thoroughly at the head of two industrial commissions which he brought here from England for the purpose. He has embodied it in a pamphlet just issued, and copies of which have reached this country.

"Trade has increased by leaps and bounds, securities have risen enormously—perhaps almost to the pitch of inflation—the earnings of railroads have been colossal, workmen's wages have never been so high, and have been voluntarily raised by the large undertakings as much as 10 per cent. at a time; in fact, these voluntary advances have become common throughout the country; new enterprises have been started and factories built in all directions; colossal fortunes have been made, and the present prosperous condition of the United States has become the wonder, and even the envy, of the world."

International Steel Rail Pool Broadened.

THE international steel rail pool formed a few months ago by British, French, German and Belgian makers has been broadened, it is announced, by the inclusion of the United States Steel Corporation—in certain zones, at least. The agreement, it is understood, is to last for three years, and it is announced will go into effect on January 1st. A despatch from London recently, published in New York declares that it promises to be the strongest and most effective combination ever perfected, but at the same time points out that it does not, so far, include the independent American producers, who will no doubt continue to make just as hard a fight for export trade as ever.

Big Locomotive Order.—A contract to purchase twenty locomotives from the Baldwin Locomotive Works was filed last month by the El Paso and Northwestern Railway Company. The price is $314,000.

Growth of Our Trade with Canada.

EXPORTS from the United States to Canada have been heavier during the year just closed than in any previous year, and the indications are that the growth of our trade with our neighbor across the border will be a continuous one. This growth, too, has been the more remarkable because the natural products of the two countries are very similar, so that the exports are almost solely in manufactured goods. Figures compiled by the Canadian Government show that much of our progress has been at the expense of the manufactured products of Great Britain. This, of course, is the best tribute to the excellence of American goods, for bound as she is to the mother country by sentimental and political ties, British goods would naturally be given the preference if other conditions were equal, but the growth is still more remarkable, in view of the tariff preferences given by Canada to British products, amounting to a reduction of 33 1/3 per cent. on the rates charged on products from the United States.

Some idea of the increase in the trade between Canada and the United States may be gleaned from the following table prepared by the United States Government:

Years.	Exports from the United States to Canada.	Imports into the United States from Canada.
1850	$9,515,991	$5,179,500
1860	22,695,928	23,572,796
1870	25,339,254	36,265,328
1880	29,460,257	32,988,564
1890	40,282,108	39,042,977
1900	95,319,970	39,369,074
1901	105,789,214	42,482,163
1902	109,642,993	48,076,124
1903	123,266,788	54,781,418
1904	131,274,346	51,406,265

The following table showing the growing percentage of imports from the United States and the proportion of imports from Great Britain in Canada's total imports has been compiled by the Canadian Government:

Years.	Total imports for consumption into Canada.	Share supplied by: United States. (Per cent.)	United Kingdom. (Per cent.)
1890	$112,765,584	46.4	38.5
1891	113,345,124	47.4	37.1
1892	116,978,943	45.5	35.4
1893	121,705,030	47.8	35.4
1894	113,093,983	47.0	34.2
1895	105,252,511	51.9	29.6
1896	110,587,480	53.0	29.8
1897	111,294,021	55.4	26.4
1898	130,698,006	60.2	24.9
1899	154,051,593	60.4	24.1
1900	180,804,316	60.7	24.7
1901	181,237,988	60.9	23.7
1902	202,791,595	59.5	24.1
1903	233,790,516	58.9	25.2
1904	251,464,332	60.0	24.6

It is proper to add that the above statement, which is from the official figures of the Canadian Government, shows on comparison with the official figures of the other countries of the world that the United States is supplying a larger share of the present imports of Canada than it supplies of the imports of any other country in the world.

Better Cotton Trade with Cuba.

THE improved trade with Cuba in bleached cottons is wholly due to the enterprise of a few Americans who made a careful study of its requirements and of the production of goods suitable to meet these requirements. These Americans made a thorough canvass of the Cuban markets and made preparations to give buyers precisely what they wanted in the way of finish, packing, delivery and terms. As a result the sample orders ran from 500 to 1,000 pieces, which is an indication that the final orders will reach 10,000 pieces.

Apropos of Cuba and her trade relations with the United States, it will be noticed in the issue of October 1st of *El Economista,* a review published in Panama, that a reduction of the duty to 2 per cent. ad valorem on machinery and material for railways is advocated, with complete exemption of the duty on goods of this character of *American* origin, in recognition of the advantages conferred by the treaty of reciprocity with the United States.

Exporting Portland Cement.

PLANS for the development of the American export trade in Portland cement occupied a considerable portion of the time of the annual convention of the Association of American Portland Cement Manufacturers held in New York last month.

A resolution was adopted providing for the employment of special agents, who will be sent to investigate the large export trade which may be obtained in South Africa and South America.

Funds were also set aside for the exploitation of new uses for cement in its various forms.

A committee was deputed to petition Congress to make reciprocity treaties which would aid in the development of the export end of this industry. A number of technical matters were also discussed, and a committee reported that uniform specifications for testing cement had been adopted by practically all of the engineering societies of the country.

Zinc Vein Found.—The Dorin Lead and Zinc Mining Company, which has been exploring its property on Black River, Minnesota, U. S. A., for two years, has found that the zinc predominates at depth, and that it is a very fine vein of rosin jack. A concentrating mill will be erected this winter and the mine developed for a considerable production. Arrangements have been made for shipment of the product.

Quality and Price

are the first considerations when making a purchase.

Both these essentials are contained in the

Schroeder

1904 MODEL

Roller Gearing, Rotary Washer.

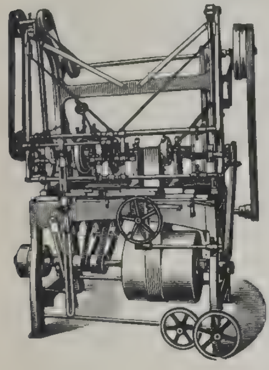
Lightest to Operate. Best Construction.

Furnished with detachable legs for export. We also manufacture the **"B.B."** and **"Brammer" Rotaries,** also several styles of Lever Washers—round or square. Write us for further particulars

BENBOW-BRAMMER MFG. CO.,

The Pioneer Washing Machine Manufacturers,

St. Louis, Mo., U. S. A.



KIMBALL BROS. & SPRAGUE,

BROCKTON, MASS., U. S. A.

Manufacturers and Exporters of

Last Turning Machinery.

Orders filled through commission houses.

Correspondence solicited.

Catalogue "S" on application.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the

WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from **Louisiana** and **Mississippi Red Cypress,** which is less susceptible to expansion and contraction caused by hot or cold water **than any other timber known. Our hinges are put on with bolts instead of screws,** and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2⅜ turns of the fly-wheel to one turn and return of the dasher. **The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.**

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** ($30.00) in U. S. gold or its equivalent we will box, ready for transportation and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**
Weight, 600 lbs. Measurements; 18x24x24 inches.

WHITE LILY WASHER CO.,

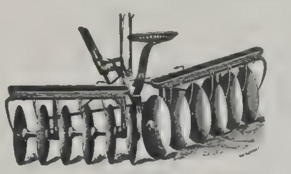
MANUFACTURERS,

DAVENPORT, IOWA, U. S. A.

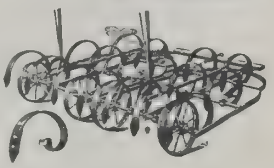
RODERICK LEAN

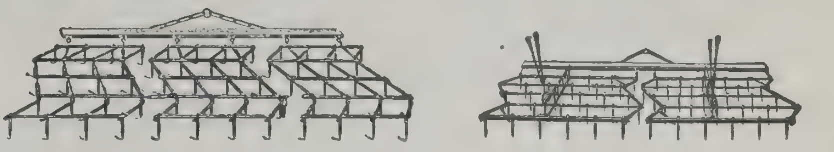
FARM IMPLEMENTS

"In Use Wherever the Sun Shines."



Variety of kinds suited to the requirements of any country. Correspondence solicited. Catalogues furnished in English, German and Spanish.

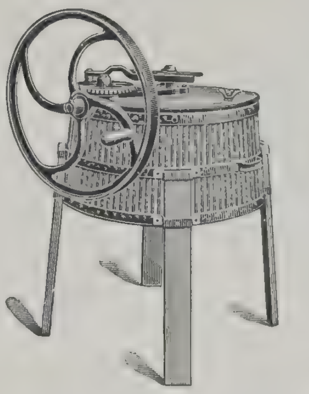




RODERICK LEAN MFG. CO., Mansfield, Ohio, U. S. A.

United States Washing Machine Co.

Successors to INTERNATIONAL MFG. CO.



MANUFACTURERS OF

GALVANIZED STEEL WASHING MACHINES.

Being made of **Galvanized Steel** is the **only washing machine** that will **not warp, rust** or be affected by **climatic changes. Absolutely germ-proof and perfectly sanitary.**

SPECIAL EXPORT OFFER:

Upon receipt of **$11.00** in U. S. Gold or its equivalent, we will crate (K. D.), ready for transportation abroad, and deliver f.o.b. New York,

2 United States Galvanized Steel Washing Machines.

Each machine occupies six cubic feet, and weighs seventy-two pounds.

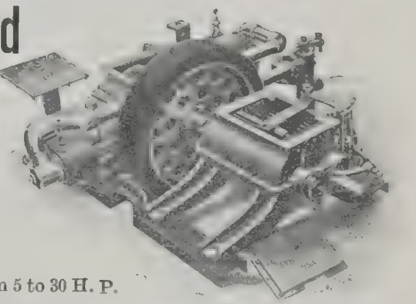
Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

UNITED STATES WASHING MACHINE CO.

RACINE, WISCONSIN, U. S. A.

Accepted as "the Standard" the World Over.

The Brennan Standard Gasoline Motor



The recognized type of motor for

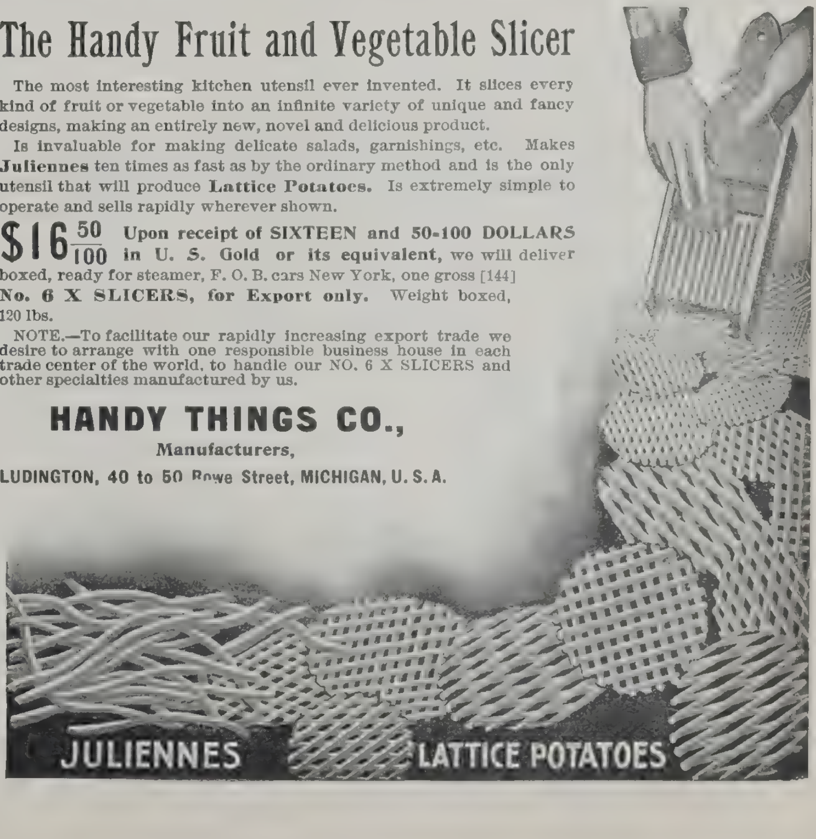
AUTOMOBILES.

Is Non-Vibrating and Has Transmission Gear on Motor Shaft.

Send for our illustrated catalogue, mailed free.

From 5 to 30 H. P.

BRENNAN MOTOR CO., Syracuse, N.Y., U.S.A.



The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes **Juliennes** ten times as fast as by the ordinary method and is the only utensil that will produce **Lattice Potatoes.** Is extremely simple to operate and sells rapidly wherever shown.

$16 50/100 **Upon receipt of SIXTEEN and 50-100 DOLLARS in U. S. Gold or its equivalent,** we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] **No. 6 X SLICERS, for Export only.** Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

HANDY THINGS CO.,

Manufacturers,

LUDINGTON, 40 to 50 Rowe Street, MICHIGAN, U. S. A.

A New American Gold Field.

WHAT it is believed will develop into one of the richest gold-mining districts in the world and will rival the famous Cripple Creek mines and the gold fields of California is being developed in southern Nevada, U. S. A. Within a year a thriving mining camp, which has been named Goldfield, has sprung up and miners from all over the United States are looking to it.

In marked contrast to Cripple Creek and other great gold camps the producing mines are all on different veins, hundreds of which appear on the surface of the long slope where the discoveries have been made. Another feature of the Goldfield properties is that the mines from which the big shipments have been made were pay ore from the grass roots. This fact, more than anything else, has accounted for the astounding production of the camp for the first year of its history. The first year's shipments from Cripple Creek amounted to $360,000. Goldfield has already shipped ore valued at $3,000,000, and double this amount is stacked up at the different mines awaiting better transportation facilities.

The first ore was shipped from Goldfield last winter by the Combination Mine. This property has had ore from the surface to its present depth of 330 feet, and the ore has averaged $500 a ton. The mine has shipped $500,000 worth of ore and has ore valued at another half-million packed in sacks on the dump ready for shipment. This sum represents only the development work, for no exploitation of the great ore veins to ascertain their width and thickness has yet been undertaken. The great Jumbo mine, now tied up in litigation, produced during the year $1,000,000, and has a 4-foot streak of pay ore running from $300 to $1,000 a ton at a depth of only 200 feet.

Probably the best example of a mine shipping rich ore from the surface is the famous Sandstorm lease, which lies two miles north of Jumbo. Four men who met in the maelstrom of camp life pooled their combined assets, amounting to a few hundred dollars, and leased a small section of desert sand having a most unpromising appearance because of its distance from the then known ore zone. In three days they dug a hole 10 feet deep and took from it fifteen tons of ore, netting $98,000. At this point the owners of the property objected to this easy method of acquiring wealth by merely scraping the ground, and insisted on the lessees sinking a shaft. They are now doing this and have millions in sight.

Although Goldfield was at the beginning what is known as a poor man's camp, where every one had an equal chance, it is not so now. The territory for miles has been located and staked, and only persons with capital who can acquire leases or buy outright have much chance of doing anything there.

What Dynamite Is.

PROBABLY there is no article in more general use in the development of new countries than dynamite. In mining and in excavation, and in a hundred other fields it has superseded the old blasting powder and other explosives in use a generation ago. Many persons, however, have little idea of what dynamite really is and of how it is prepared. Even those who use it constantly know very little of its composition and its characteristics, and to this ignorance no doubt are due many of the accidents attributed to it.

The chief point of difference between dynamite and powder is that it is not an explosive, but a detonator, a difference in degree only perhaps, scientifically considered, but having a wide difference in effects.

An explosion is caused by the generating or liberating of gases from a solid, liquid or gaseous substance so quickly that the gases formed cannot be confined in the space of the original substance—a more or less slow process; whereas detonators liberate their gases almost instantaneously. The greater bulk must find an outlet at once, and does not have time to seek the place of least resistance, but must find space immediately. A detonation is, in round numbers, 1,000 times quicker than an explosion. A strong concussion and a spark in combination will cause it.

Dynamite is not quite the dangerous substance that most people suppose it to be. It can be handled with impunity, and even recklessly, if one knows just how this should be done, and will not detonate, except under certain well-defined circumstances. The marketable article, in order to fit into drill-holes, is generally in the form of sticks varying from half an inch to 3 inches in diameter, and in length from 2½ to 12 inches. These sticks are formed by packing dynamite into oiled paper cases of the required size.

Dynamite, according to the best authority of those familiar with its manufacture, is nitro-glycerine held in an absorbent, such as infusorial earth, wood pulp, coal dust or other material that will hold the nitro-glycerine tightly and not allow it to settle at the bottom. It is a powder of rather a sticky, resinous nature, varying in color with the absorbent used. The strength is commercially designated by the percentage, by weight, of the amount of nitro-glycerine absorbed by the carrier, running from 20 to 80 per cent. It probably is more generally used at or around 40 per cent. With the absorbent are certain other ingredients so combined as to obtain perfect results in absorption and to guard against the danger of any free acid left in the nitro-glycerine. The nitro-glycerine is the only detonating property; the absorbent neither helps nor retards this property.

For commercial purposes stick dynamite usually is packed in twenty-five or fifty pound cases, together with a liberal allowance of sawdust, and it then can be handled, carted, freighted or stored without appreciable danger, providing ordinary intelligence and due care be used.

Metal Life-Preservers.

THE Board of Supervising Inspectors of Steam Vessels at Washington has been giving serious consideration to a life-preserver made entirely of metal, which, it is claimed, is practically indestructible and much more efficient than the old style of cork preserver. The article was presented to the Board for its approval, which is necessary before it can be added to the equipment of American vessels, by an attorney who refused to disclose the name of the inventor.

The new life-preservers are preferably made of seamlessly drawn copper or brass, but it is claimed that they can be safely and more cheaply made of painted, copper-coated, japanned, or enamel tin, with double-locked seams. The eight regulation size metal floats are uniquely locked together securely by a very flexible, endless metal tape or ladder chain. It is claimed for the invention that there is nothing about it to get out of order or easily rot, and that the contrivance is very simple. The design conforms to the size and shape of the regulation cork and canvas floats, and it is explained that inspections can be rapidly and thoroughly made on the same principle of immersion which is used to locate punctures in a rubber tire. The attorney asserts that, with a crude, unsatisfactory and now abandoned life-preserver, his client floated day after day last summer over the most turbulent waves along the coast of Long Island. He declares that at the end of the season, although the eight tin floats were badly battered or bent, there was not a leak. Their buoyancy was such that two of them floated the inventor easily.

A New Life-Saving Gun.

A LARGE number of life-saving guns of a new type are being constructed for the United States life-saving service, and it is expected that in a short time the old-style muzzle-loading gun used to shoot a line from the shore to a ship in distress will have joined in oblivion the muzzle-loading gun used for taking instead of saving life.

The new gun is a breech-loader, and in this service one of the chief arguments for the breech-loading system is that the gun must usually be used on stormy nights, and, standing on the beach with its muzzle elevated, it is soon put out of commission by having its closed breech filled up with rain-water. The gun is constructed of a bronze and steel alloy which will not rust under the action of salt air and water. A self-locking device made up of the least number of parts closes the rear of the bore and also provides for instantly draining off any water that may find its way into it. The powder and primer are both contained in a cartridge case made of bronze and sealed up air and water tight. The cartridge slips into the breech of the gun without trouble or loss of time. To fire the line the cartridge is placed in the breech and the latter closed. The projectile, which is in the form of a cylindrical shot, has the line attached to it and is then pushed home, when the firing takes place in the usual manner.

To Protect Machinery.—In order to keep machinery from rusting, take one ounce of camphor, dissolve it in one pound of melted lard; take off the scum and mix as much fine black lead as will give it iron color. Clean the machinery and smear it with this mixture. After twenty-four hours, rub clean with a soft linen cloth. It will keep clean for months under ordinary circumstances.

Stone-Breakers in Demand.—American stone-crushing machines, of a kind that will break stones without allowing much dust to get into the finished product, are in demand in France, according to United States Consul Benjamin H. Ridgely, of Nantes. Stone-breakers equipped with electric blowers to blow away the dust are used in some parts of France, and give good satisfaction.

Baron Kaneko Says: "Well-to-do Japanese do not live so very differently from Americans. For breakfast they have their coffee—from your latest possession, the Philippines; condensed milk from Chicago, bread from flour milled in Minneapolis. They smoke a cigarette of Virginia leaf, and they read a morning paper printed on paper made in Wisconsin."

Americans to Build Irish Tramways.—A New York firm has just secured the contract for the conversion of the horse tram-car lines in Belfast, Ireland, to a system of electric traction. The total value of the contract is about $2,500,000. The same firm has also obtained the contract for the construction of an electric street railway system in Montevideo.

Francis to Make World Tour.—It is reported that David R. Francis, president of the St. Louis Exposition, will make a tour of the world to repay the visits of foreign dignitaries and to express the gratitude of the Government and the city of St. Louis for the liberality of other nations and exhibitors.

American Hog Products for Argentina.—In spite of the rapidly growing meat exports of Argentina, that country sends out nothing in the line of provisions. On the contrary, she still has to import all her hog products, and the imports of hams, bacon and lard to that country from the United States amount to $110,000 annually.

"THE QUICKEST MONEY-MAKER EVER PLACED UPON THE MARKET."

IRVING'S NEW WIZARD OR "GY-ROTARY" TOP.

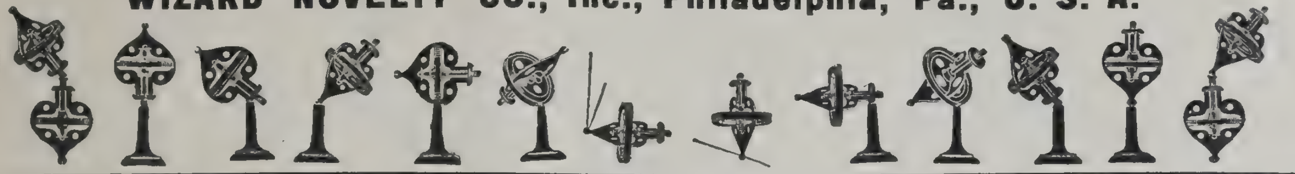
Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

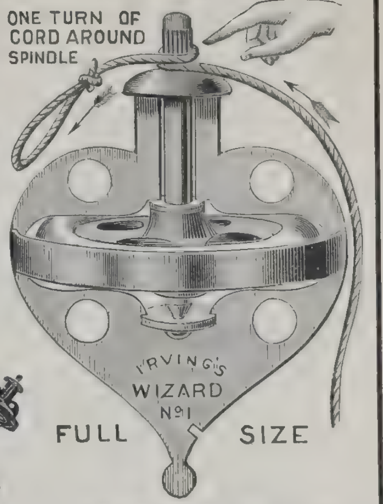
THIS MECHANICAL PARADOX is constructed on accurate scientific principles ; a perfect little high-speed machine, made of **STEEL,** nickel-plated; **capable of 20,000 revolutions per minute,** and can be put in motion by a child in three seconds Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation, it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

FOR EXPORT ONLY——$9.00.

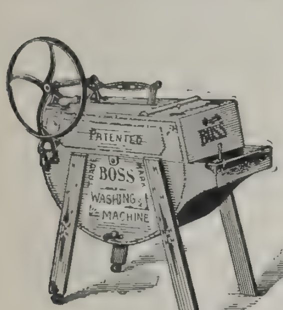
Upon receipt of $9.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, one gross (144). IRVING'S NEW WIZARD OR "GY-ROTARY" TOPS. Weight, boxed, 30 pounds. Size of box 17⅛ x 8⅛ x 8½ inches. **ORDER NOW. YOU WILL SURELY WANT MORE.**

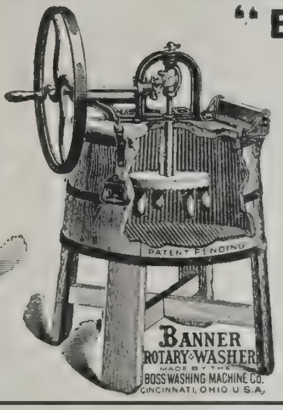
WIZARD NOVELTY CO., Inc., Philadelphia, Pa., U. S. A.




ONE TURN OF CORD AROUND SPINDLE
IRVING'S WIZARD No 1
FULL
SIZE

Patent Applied for July 19, 1904.




PATENT PENDING
BANNER ROTARY WASHER
MADE BY THE BOSS WASHING MACHINE CO. CINCINNATI, OHIO U.S.A.

"BOSS" Line of Clothes Washing Machines

Will cleanse any fabric quick and without the slightest injury. These machines are a

NECESSITY WHEREVER CLEAN CLOTHES ARE DESIRED.

It will pay you to secure our catalogue and price-list before placing your order elsewhere.

MANUFACTURED BY

BOSS WASHING MACHINE CO.

CINCINNATI, OHIO, U. S. A.

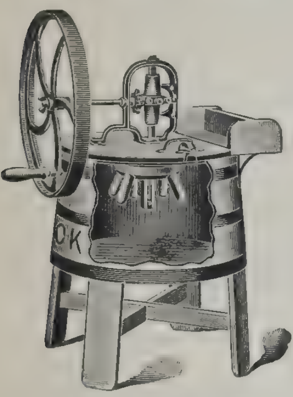
Largest Manufacturers in the World of Clothes Washers.

"THE SUN NEVER SETS UPON"

THE GENUINE "O-K" WASHER.

KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

The O. K. is the KING of ROTARY WASHING MACHINES! Because:



O. K. WASHER.

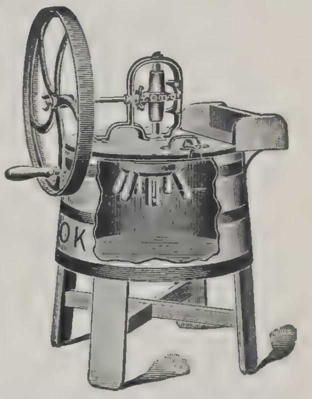
1. The **O. K.** is the only **Rotary Washer** that has **Revolving Steel Ball Gearing,** reducing the friction and thus making the machine so **light running** and **almost noiseless.**
2. The tub is made of **Louisiana Red Cypress** lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
3. **The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.**
4. **The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.**
5. The tub has a wringer box, fastened with steel brackets.
6. The lid on tub closes tight, no escape of steam.
7. Has gilded hoops, castings and name.

Prices quoted F. O. B. New York. Each **O. K. Washing Machine,** crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet

Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,

DAVENPORT, IOWA, U. S. A.



O. K. WASHER.

AWARDED GOLD MEDAL at WORLD'S FAIR, ST. LOUIS, for BALL-BEARING WASHING MACHINES

COST: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at $6.62½=$26.50.

SELLING PRICE: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at $14.00=$56.00.

Net Profit Over 100 Per Cent.

FOREIGN MARKETS ONLY. Upon receipt of $26.50 in U. S. Gold, or its equivalent, we will pack, ready for transportation abroad, and deliver f. o. b. New York, Boston, Philadelphia or Baltimore,

Two "1900" and Two "1900" Junior Ball-Bearing Washing Machines.

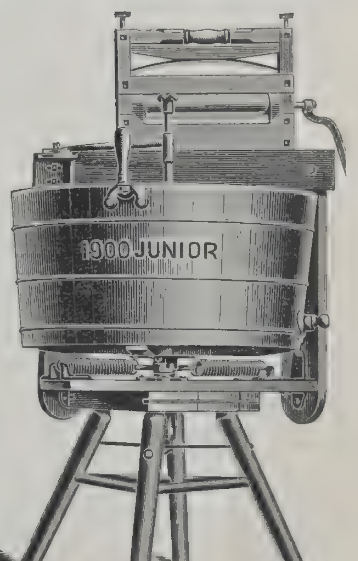
Weight of the above four Washing Machines, 250 pounds.

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-two years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment,** but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water,** thus **forcing the water through** the **finest** or **coarsest fabrics,** causing the clothes to become **absolutely clean, without boiling or scrubbing, without wear or tear, and without the use of chemicals.**

Send us $26.50 for two "1900" and two "1900" Junior Washers TO-DAY. We will ship the washers same day that we receive your order. In acknowledging receipt of your order we will quote your price of washers in car-load lots. You will quickly convert your sample order of four washers into cash, with a profit of over 100 per cent.

THEN YOU WILL ORDER IN CAR-LOAD LOTS.

Orders received direct or through export commission houses. When ordering through the latter, please specify "1900" and send us duplicate of order.



The "1900" Washer Company,

BINGHAMTON, NEW YORK, U. S. A.

Neutral Commerce and Contraband.

THE doctrine of neutrality is of modern growth, says the *American Asiatic*. The doctrine is not fully matured, yet certain rights of neutrals are an important part of established international law. It is impossible to describe within a limited space the full application of the neutrality law, but certain features of specific value to business men in the present Far Eastern situation may be discussed. It should be at once stated definitely that the ancients' doctrine that the rights of war have first place has in modern times been completely reversed, that is to say to-day neutral power has increased more than war power, and the tendency is more and more toward such alterations of the code of war as will favor neutral commerce. The publicists of the last hundred years have given the doctrine of neutrality the greatest attention.

Primarily in regard to the commerce of neutrals, it is considered by international jurists that if restrictions to neutral trade are extreme the evils of war are very much increased. It will at once be grasped that this principal is at the bottom of the very liberal contraband proclamations of Russia and Japan. Each belligerent may, indeed, interdict all trade of neutrals with the other without jarring the conventions established. The restrictions on neutral trade have related generally:

1. To the conveyance of goods in neutral ships and of neutral goods in hostile ships.
2. The conveyance of articles of war.
3. To conveyance to places specially affected by war.

In order to effect these, right of examination or visit must be exercised on vessel and goods.

From various rules the practice of seizure has in modern days been reduced to two simple definitions:

1. The neutral's goods are safe in the end by whatever vessel conveyed, although liable to sundry inconveniences of search and capture in hostile conveyance.
2. Free ships make goods free—that is, private property of the enemy and not contraband is safe on neutral ships.

Another feature of this modern practice is that while a belligerent may seize the enemy's goods on the ships of a neutral, it has been in favor of paying the freight to the carrier, and that for the full voyage, treating the capture as equivalent to delivery, excepting when engaged in the enemy's coasting trade.

Regarding contraband, there are several points in the Russian and Japanese proclamations which, in view of their indefiniteness can only be construed under the general practice. This general practice will determine claims for damages on any seizure. These practices are:

1. The definition of contraband must in the proclamation be clear and positive. Generally speaking, contraband articles are those affording direct assistance to the enemy's military or naval operations. Machinery for steam vessels, coal, having regard to quality and destination, and other articles might be mentioned as to be construed as contraband when provable for direct use in war.
2. "Occasional contraband" is a term which may be applied, for instance, to naval stores.

F. S. Stratton, Collector of Customs of San Francisco, U. S. A., has issued a statement relative to contraband. Referring first to the power vested by Act of Congress of 1898 in the President to prohibit at his discretion export of coal or other war material except otherwise ordered by Congress, the Collector then summarizes the proclamation of the President of February 11, 1904, as follows:

"United States citizens without restriction may manufacture and sell within the United States arms and munitions of war and other articles ordinarily known as 'contraband of war.' The proclamation declares that they cannot carry such articles on the high seas for the use or service of either belligerents without incurring the risk of hostile capture and the penalties announced by the law of nations in that behalf. Export, therefore, of all doubtful articles and merchandise is not prohibited, but the protection of the flag is withdrawn from such articles if seized by either of the belligerent parties to the present war.

"The term 'contraband of war' comprehends only articles having a belligerent destination, as to an enemy's port or fleet. With this explanation the following articles named by the Collector are for the present to be treated as contraband:

"*Absolutely Contraband.*—Ordnance; machine guns and their appliances, and the parts thereof; armor plate, and whatever pertains to the offensive and defensive armament of naval vessels; arms and instruments of iron, steel, brass or copper, or of any other material, such arms and instruments being specially adapted for use in war by land or sea; torpedoes and their appurtenances; cases for mines, of whatever material; engineering and transport materials, such as gun-carriages, caissons, cartridge-boxes, campaigning forges, canteens, pontoons, ordnance stores; portable range-finders; signal flags destined for naval use; ammunition and explosives of all kinds; machinery for the manufacture of arms and munitions of war; saltpeter; military accoutrements and equipments of all sorts; horses.

"*Conditionally Contraband.*—Coal, when destined for a naval station, a port of call, or a ship or ships of the enemy; materials for the construction of railways or telegraphs, and money, when such materials or money are destined for the enemy's forces; provisions, when destined for an enemy's ship or ships, or for a place that is besieged, or for the army.

"Goods not included in either of the above categories of either absolutely or conditionally contraband will be protected by the American flag where the goods are exported in merchant or other vessels of the United States."

Rules of war concerning contraband were published officially by Russia on February 28th, as follows:

"Rule 5.—In regard to neutral trade the following points must be observed: A—The flag covers the cargo for a belligerent, excepting contraband of war. B—Neutral goods under the enemy's flag, except contraband of war, are not subject to confiscation. C—Blockades to be obligatory must be effective—that is, they must by sufficient force cut off approach to the enemy's territory.

"Rule 6.—The following will be regarded as contraband of war: A—Every kind of small arm and guns complete or in separate parts and armor. B—Parts of firearms and ammunition, fuses, shells and bullets. C—Caps, cartridges, cartridge-cases, powder, saltpeter, sulphur, explosives or materials for purposes of explosion, such as mines, dynamite, pyroxilin, various explosive substances, conductors and everything for exploding mines. D—Everything appertaining to artillery, engineering and troop trains, such as gun-carriages, limbers, cartridges, ammunition boxes, field smithies, field kitchens, instrument wagons, pontoons, bridges, trestles, barbed wire, horse harness for transport service, etc. E—Material for equipment and clothing of troops, such as bandoliers, knapsacks, sword belts, cuirasses, entrenching tools, drums, field kettles, saddles, harness, uniforms, tents, etc. F—Ships bound for the enemy's ports, even if sailing under a neutral commercial flag, if their construction and internal arrangements or any other indication makes it apparent that they have been built for warlike purposes or are for sale or are destined to be handed over to the enemy on reaching their destination. G—Every kind of ship's machinery or boilers, mounted or in parts. H—Every kind of fuel, such as coal, naphtha, spirits, etc. I—Telegraph and telephone materials. K—Everything intended for warfare on land or on sea; also, rice, foodstuffs, horses, beasts of burden, and any other animals intended for war purposes if they are sent at the enemy's cost or order.

"Rule 7.—Neutral States are forbidden to transport the enemy's troops, to carry letters or despatches for the enemy or to place transports or warships at the enemy's disposal. Neutral ships with contraband of war of any sort can, according to circumstances, not only be seized, but can also be confiscated."

Big Demand for Steel Rails.

THE leading American railroad systems are now beginning to place large orders for steel rails. Before the close of January it is estimated that the various rail producers will have orders booked for standard rails to a total of between 1,500,000 and 2,000,000 tons. The present outlook is that the production of steel rails during 1905 will amount to fully 3,000,000 tons, thus establishing a new high record.

One reason why it is expected that the orders for steel rails in 1905 will exceed 3,000,000 tons is because of the increase in the weight of the rails now being used. Only a few years ago the majority of the orders were for 50-pound or even lighter rails. The majority of the large railroads now use 70 and 100-pound rails exclusively. Even without any new construction, therefore, the large increase in the weight will cause a considerable increase in the tonnage.

The same applies to all classes of railroad equipment. The old-time bridges of the earlier days of steel construction, with a resistance of 3,500 pounds per foot, have now been replaced by bridges which have a resistance power of 7,500 pounds per foot. The weight of locomotive has increased from 150,000 to 175,000 pounds to 350,000 to 400,000 pounds.

American Electrical Machinery in Spain.

THE advantages of electricity for driving cotton mills have obtained recognition in Spain, where one of the largest proprietors has decided to introduce it. His two spinning and weaving mills at Malaga, says the *Electrical Engineer*, of London, are the biggest in the country, employing some 5,000 hands. Arrangements have lately been made by him for obtaining a supply of electric power from the Chorro Power Company, which has established a generating station in the celebrated Chorro Gorge, some fifty miles north of Malaga. The power is transmitted by three-phase current at a pressure of 25,000 volts to a sub-station in Malaga, where the pressure is reduced to 2,500 volts, part of the energy being supplied to the Malaga electric lighting station. The machinery installed is all American.

Reform in United States Consular Service.—A practical consular reform is President's Roosevelt's order, including 355 subordinate consular positions in the classified service. Years ago the corps of consular clerks was formed for the purpose of affording a training school. Few of these clerks, however, have become consuls, for the reason that political backing was required to obtain the higher post and because, if obtained, dismissal was to be expected at the next change of administration. The new executive order changes this state of affairs, and opens to consular employees a career which is worth working for and which should now attract a rather higher grade of men than those who now predominate in the service.

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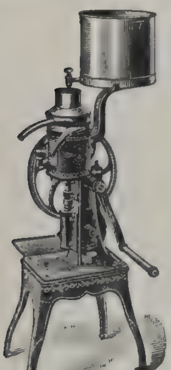

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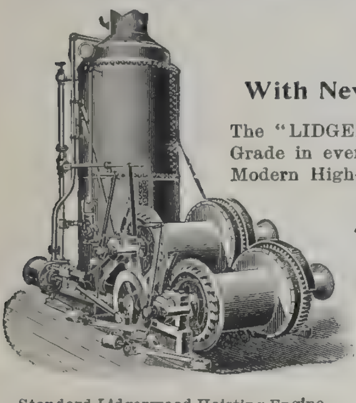

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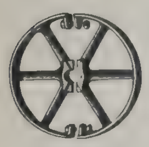

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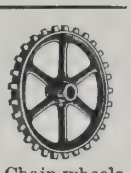

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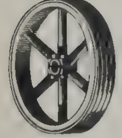

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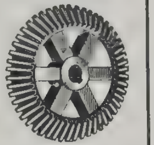

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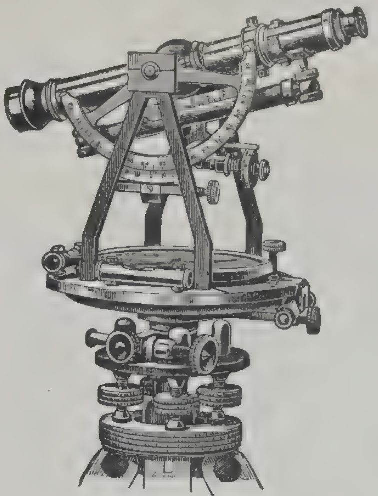

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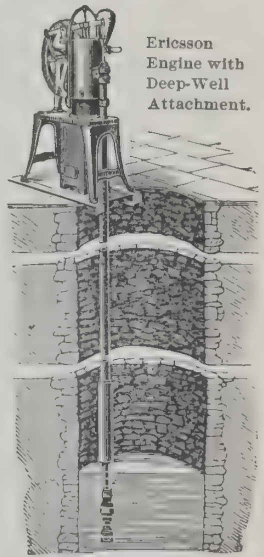

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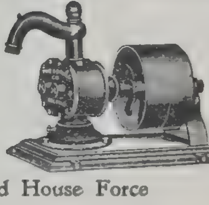

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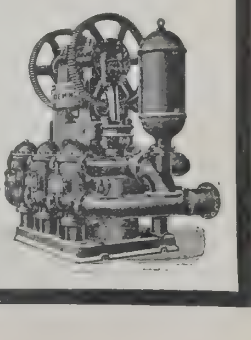

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America Has the Longest Electric Power Line.

THE longest system of electric power transmission in the world has just been completed in California, U. S. A. The plant had its inception in a water-power near Nevada City, Cal., and to-day it is supplying power to seventeen counties. Its power lines, if strung together, would reach all the way across the American continent, and the longest single transmission line which it operates is 250 miles long.

They supply power for the most diversified mining, manufacturing and traction industries; operate Cornish pumps and mining hoists of the deep gold mines of the mother lode, and drive the street cars in San José, 200 miles distant. They operate the gold dredges of Feather River; light electrically twenty-odd cities and towns; pump water for municipal supply; irrigate districts and supply water to reclamation tracts; run the flour and woolen mills of Marysville and railway shops of Sacramento. In addition they run the flour mills of Vallejo and Port Costa; the wheels of the navy yard at Mare Island; the powder works at Pinole; the smelting and manufacturing companies along San Pablo Bay; the State institutions at San Quentin and Napa; the street cars and printing-presses of Oakland, and operate in seventeen counties, the most populous of central California, containing one-half the population and three-fifths of the assessed value of the State.

Fuel is scarce and costly in California, so that steam electric power plants are out of the question, except in the far southern part of the State, in the fuel oil region. In order to obtain a permanent and less expensive power the mountain storage system has been utilized. Like many other enterprises, the great electric system of California started on the smallest basis and grew under the laws of demand and supply.

The initial voltage is 40,000 volts, increased as needed to 50,000, 60,000, 70,000 volts or higher as needed to minimize losses incurred in transmitting power over long distances, involved in a radius of upward of 250 miles. Power is transmitted across the Straits of Carquinez on steel structural towers, on elevations in all 375 feet high, between which are cables 4,448 feet long, with anchorages in all 6,400 feet long, sending power all over four counties. Upward of 25,000 horse-power accomplishes this vast work. The upper waters of the Yuba River are united at the main power-house, which is tied by pole lines to two other power-houses many miles apart. The flume carrying water to the penstocks (36-inch steel tubes), which convey the water to the turbine wheels, is built with the solidity of railway trestle. The lumber for the flue was delivered on a gravity tramway, 1,275 feet long, down a mountain.

The flume is 7.6 miles long and conveys the water from a dam 167 feet long and 14.5 feet high. After the erection of the dam the pond behind it speedily filled with silt and gravel from the mines above, removing all danger of destruction by freshets. The flume has a carrying capacity of 23,000 cubic feet of water a minute, assured by a watershed draining 532 square miles. At the terminus of the flume it meets five penstocks, the ends of which are set in solid concrete, 702 vertical feet above the power-houses, which they approach at an angle of 45 degrees. The penstocks are 30 inches in diameter, and are held firmly to the ground in troughs of concrete. The five dynamos exert 3,000 horse-power each. They are set on horizontal shafts. The force of the blow of water striking each bucket of the turbine wheels is 30 tons, while the pressure of water at the base of the penstocks is 300 pounds per square inch. Should the dynamos slack a little for any cause, a stream of water spurts over the roof of the power-house that will smash a log to splinters or hurl a bowlder across the stream with the muzzle velocity of a cannon-ball. The San Joaquin power-house receives a vertical fall of water of 1,411 feet, with a pressure of 609 pounds per square inch and a force striking the wheel buckets of 60 tons. The terrific power of the water is by no means stayed after revolving the turbine wheels, for on going through it climbs the walls of the wheel-pit and jumps 60 feet out into space.

These streams eat up the concrete and steel plates used to restrain them in short order, so that they are frequently replaced with new concrete and plates. When the plants are stopped or started one can see the steel tubes contract or expand like huge breathing reptiles, so awful is the force of the water. At the Whitney Power House the water leaves the nozzle at a velocity of 17,800 feet, or more than three miles per minute. At the Comstock mines a stream, or leak, no larger than a cambric needle, with 2,000 feet behind, goes through a 2-inch plank like a rifle bullet.

When an electric car starts or stops in Oakland, the automatic governors at the main power-house, 132 miles distant, instantly respond, adding or lessening the amount of water pressure required on the turbines. More than this, the lessening of pressure at the power-house sets centrifugal pumps at work, which hoist the surplus water in the flume 382 feet up into Lake Frances, the safety reservoir, storing 93,000,000 cubic feet of water for dry times. So, too, Lake Frances supplies the penstocks with water when the flume is unable to do duty.

In addition, there are storage reservoirs up to 9,000 feet altitude, taking the water of melting snows, spring rains and freshets and delivering it far below when wanted. For that matter, all the water that escapes through the turbine wheels can be hoisted back to the reservoir to do duty over again. It is the case of the boy perpetually sliding down hill and drawing his sled up. At 220 miles from the power-house the electricity acts as if generated across the street. Long-distance transmission is accomplished readily by step-up-and-step-down transformers, located at convenient distances apart. When the electricity gets tired and shows a per cent. loss of power it is made to "step up" and be shaken up like medicine in a bottle. It then "steps down" with renewed vigor.

Other American States have gigantic electric plants, and New York City consumes more horse-power of electricity, but California is an entire great State run by electricity by long-distance transmission. New York City, for instance, produces electricity by steam power at a cost of perhaps $50 per horse-power per annum because of the long haul of coal. Pittsburg produces electricity by steam power at a cost of $36 per horse-power, because it is at the coal mines. Niagara Falls, with its enormous hydraulic power, can sell electricity at $20 per horse-power per annum, at twenty-four working hours per day, as against Pittsburg's $36 steam-made electricity, at ten hours per day. Great Falls, Mont., can sell electricity at $5 per horse-power, and so on, according to locality and easy and difficult means of manufacturing electricity. California's first cost and price per horse-power are not available, but it is known to be within reason, or it could not be so universally used by everybody in the State.

Expects Great Expansion in American Steel-Making.

CHARLES M. SCHWAB, the first president of the great United States Steel Corporation, and who is recognized as one of the foremost steel experts of the world, in a recent interview declares that the United States is entering on an era of unprecedented development in the iron and steel trades. Incidentally he declares that the prospects were never brighter for general business prosperity than they are at present. Some of the things that Mr. Schwab said are as follows:

"The prospects for business prosperity in the United States were never so bright as they are now. The people can look forward with great confidence to the future.

"Within five years this country alone will need 20,000,000 tons of steel a year. The whole continent is being rebuilt, and underlying it all is the steel industry.

"The outlook for the American steel industry is simply tremendous. In 1880, when I first went into the business, there were only 1,000,000 tons of steel produced in the United States. To-day we produce more than 16,000,000 tons. Seven years ago there was practically no steel used in car frames. To-day we turn out 3,000 tons a day for cars alone. Twelve years ago there were no big steel buildings. Now we are producing 3,000,000 tons of steel annually for buildings. Seven years ago there were only 2,000,000 steel rails turned out by our mills. Now it takes 2,000,000 tons of steel to simply replace the old rails.

"Foreign countries may protect themselves against us by setting up tariffs just as we have protected ourselves against them in the United States. England, for instance, has been the greatest market for steel in the past, but England is taking steps to protect her industries against us and against other countries. The British colonies, too, have been great markets for steel, and steps are being taken to protect them against outside manufacturers. But what of that? As I said before, I predict that within five years there will be more than 20,000,000 tons of steel produced and consumed in the United States. There is no guesswork in that, although it relates to the future. The evidence upon which I make this estimate is clear and substantial. The tariffs on steel should be maintained. They should be proportionate not only to the difference in the amount of steel produced, but to the amount of labor in the finished product. It is said that the cost of labor in our steel products amounts to only 30 per cent., and that the rest is spent in equipment materials and freights. But equipment materials and freights represent labor. The difference between the useless ore in the ground and the finished product represents labor in one form or another. If we are to protect labor by the tariff, then we must remember how many kinds of labor stand between the raw materials and the finished article. Speaking from the standpoint of a practical steel-maker, I can honestly say that, from a sound public standpoint, the American people will make no mistake in standing by the tariff.

"Of course, I am deeply interested in shipbuilding. It is one of the most important interests in our national development. It is directly connected with the main branches of our business prosperity. I have no favorite method of protecting the American shipbuilding interests. But I do believe the Government should help it as it has helped other great industries in the past through the tariff. It does not matter much whether protection comes in the form of a subsidy or in some other way. Our shipping interests are in a deplorable state. And yet, in spite of that, the fact that the shipping industry attracts so much capital is an indication of the great possibilities which American business men see in it. I do not care to go into the question of particular legislation, because that is a matter better understood by others. I simply say that protection is needed for our shipping interests, and I am sure that no reasonable man who investigates the facts will doubt me."

American Autos Liked in Colombia.—Alban G. Snyder, United States Consul at Bogota, Colombia, reports that a transportation company which has secured exclusive use for public carriages of the road which leads from the upper Magdalena River to Bogota, intends using automobiles exclusively for that service. It was only last October that the first automobile, an American machine, made its appearance in Bogota, and it created great enthusiasm, so much so that our Consul requests American automobile makers to send him their catalogues, which he will place on file in the public reading room there.

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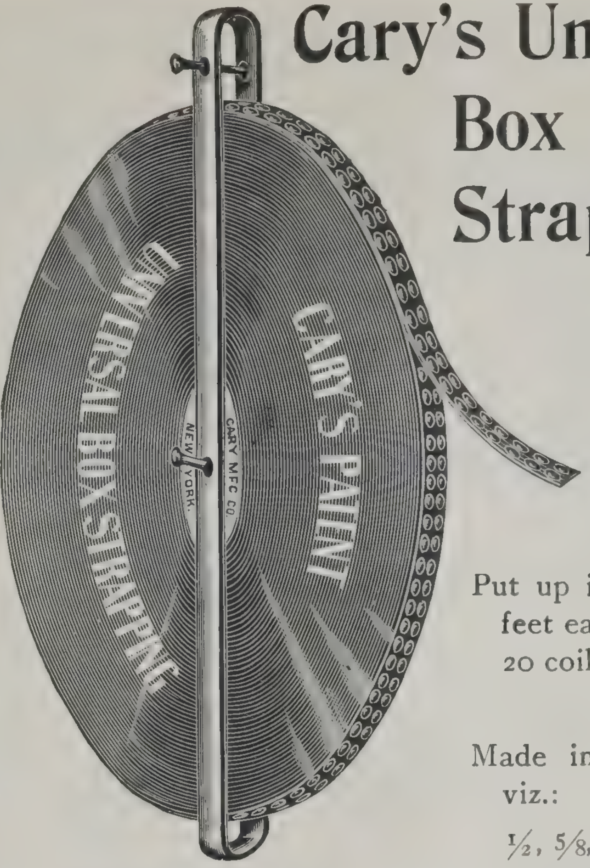

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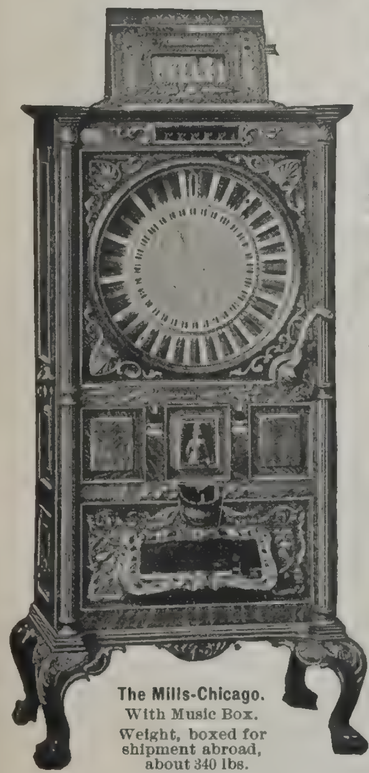

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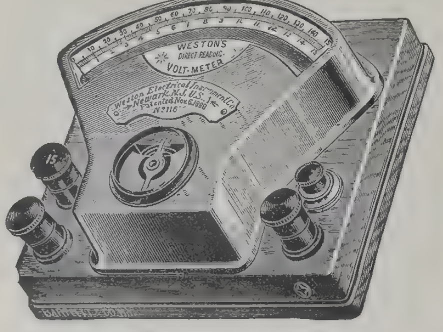
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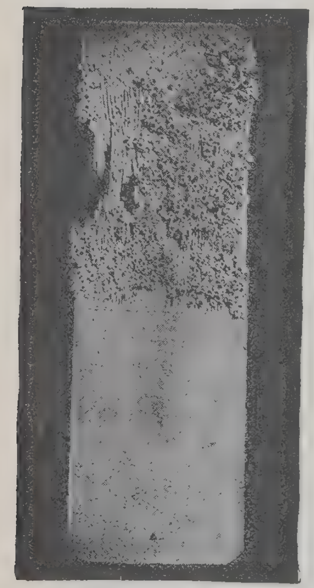

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New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J. U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint,** manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

"King of Entertainers"

Music of famous bands and orchestras, the living voices of Melba, Caruso, Calvé, Tamagno, DeLussan, Scotti, Campanari and other celebrated operatic stars can be heard in any home on the

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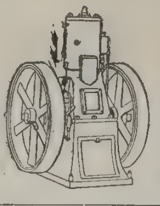

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TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals:
Gold, Silver and Bronze.

Excels on Every Point.
Cheapest to Use in the End.

TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY ONE YEARS

RACING COMPOUND for Wooden Yachts' Bottoms, Bright and Smooth.

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IS THE BEST.

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BOSTON, MASS., U.S.A.
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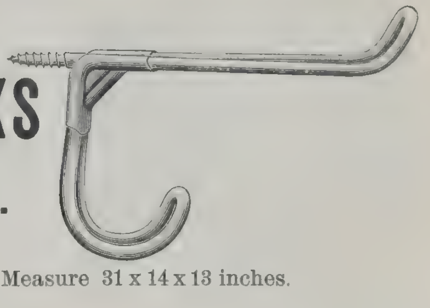

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Weigh about 200 pounds. Measure 42 x 23 x 18 inches.

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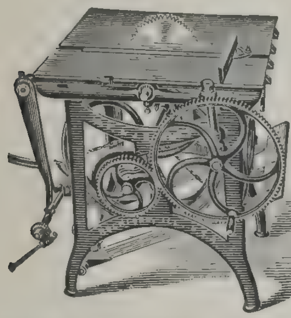

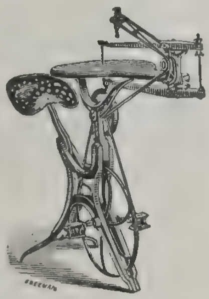

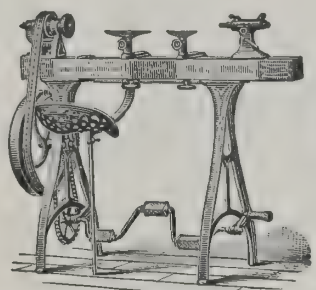

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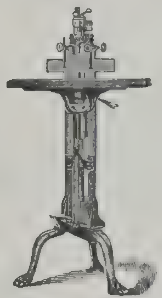

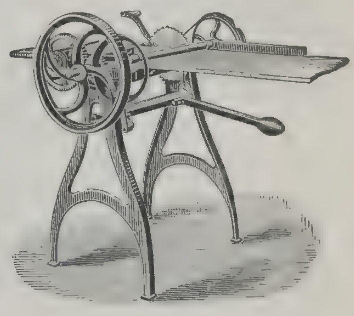

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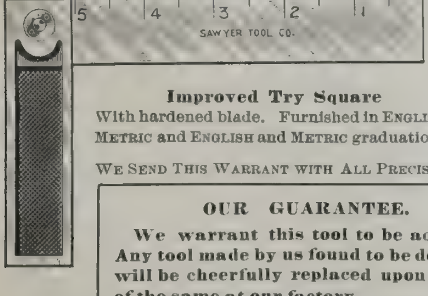

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OUR GUARANTEE.

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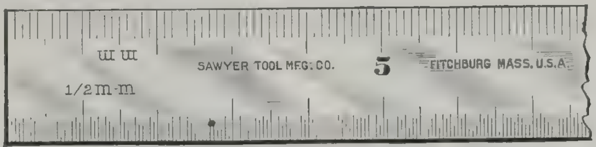

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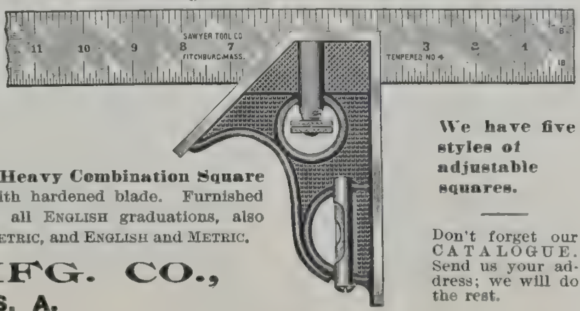

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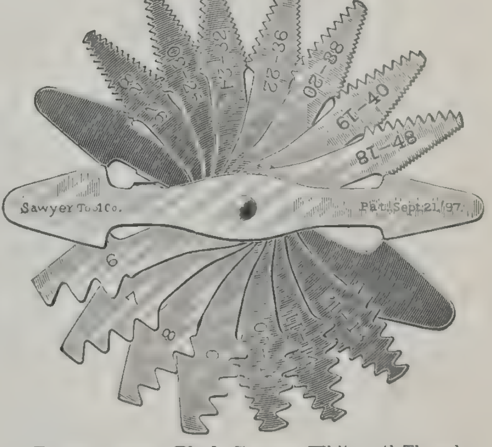

Patent Screw Pitch Gauge—Whitworth Thread.

This gauge has the blades pivoted in the middle with the pitches cut on the tapered edges of either end.

The shape of the blades of this gauge is such that they can be used in very small holes. It is compact and has the following pitches; 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 38, 40, 48.

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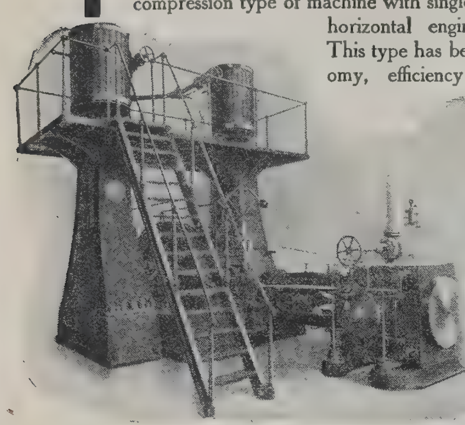

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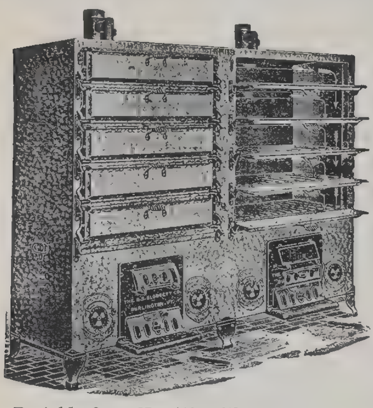

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We make the kind the United States Government buys and which is being adopted by Foreign Governments, as well as by those interested in the economical baking of the products of flour, meat and vegetables.

Either **Coal, Wood, Natural or Artificial Gas** can be utilized as **Fuel.** Used by Bakers, Hotels, Steamships, Restaurants, Confectioners, Colleges, Asylums, Private Residences and in Japanning, Enameling and Core Baking.

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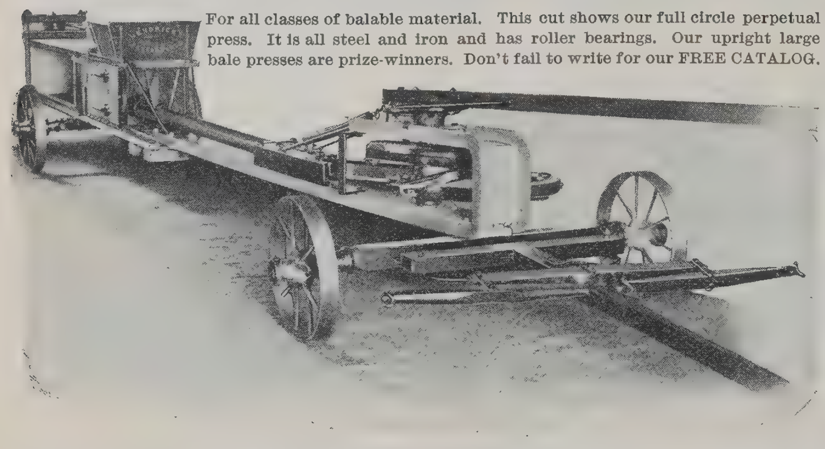

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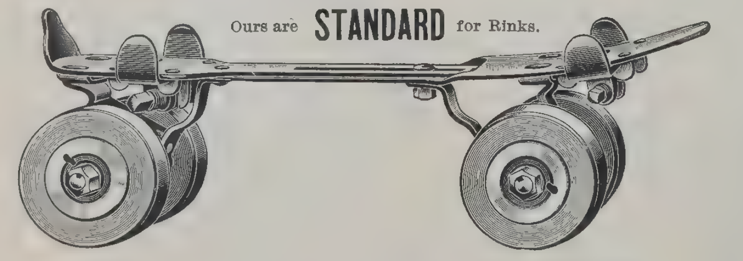

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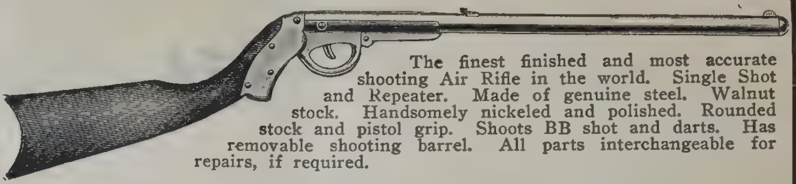

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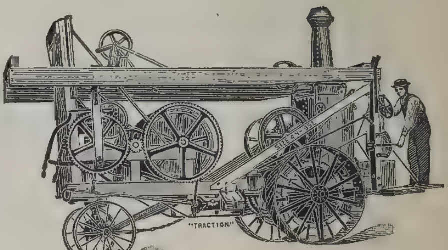

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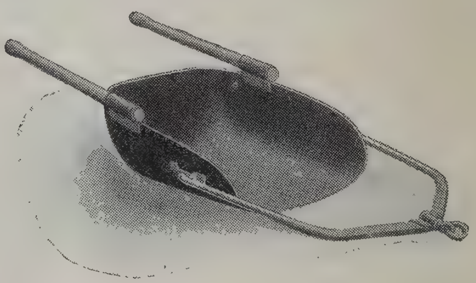

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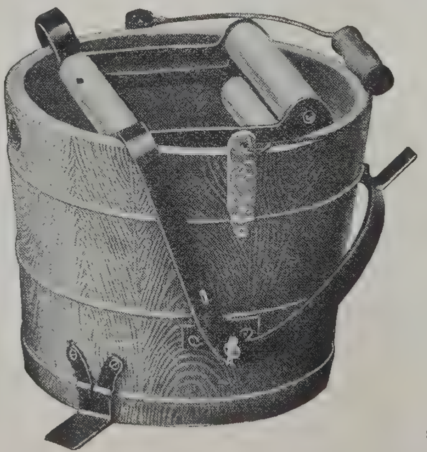

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A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

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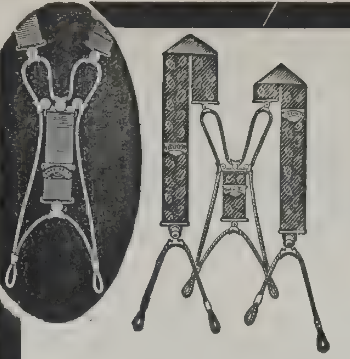

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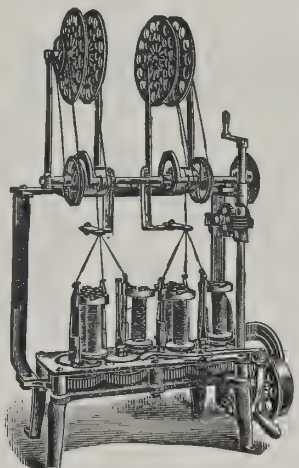

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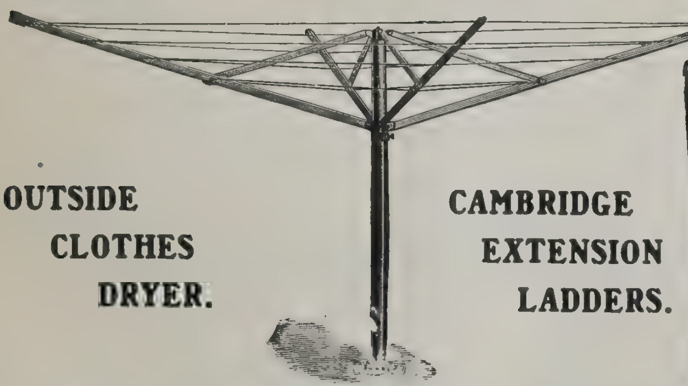

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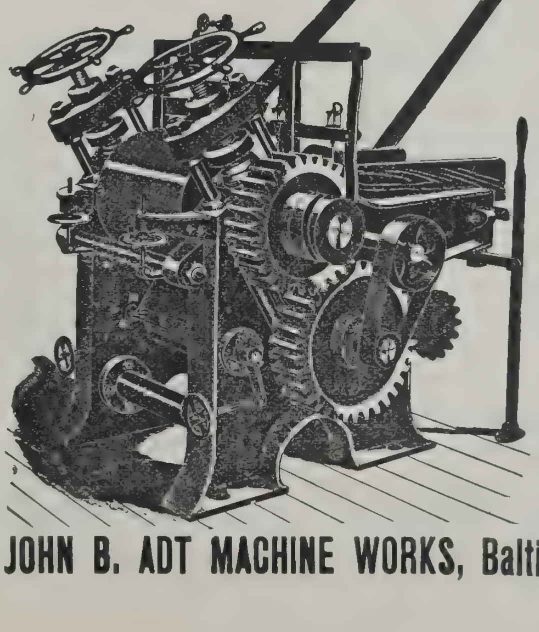

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It will press stems to a thinness not easily distinguished from the leaf in the manufactured product.

It is also provided with a Roll-Moistening Device, insuring constant moistening of the rolls.

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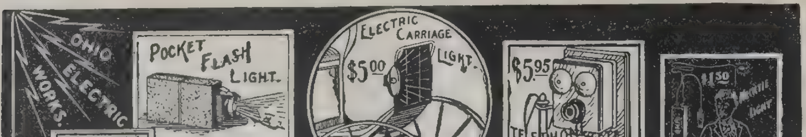

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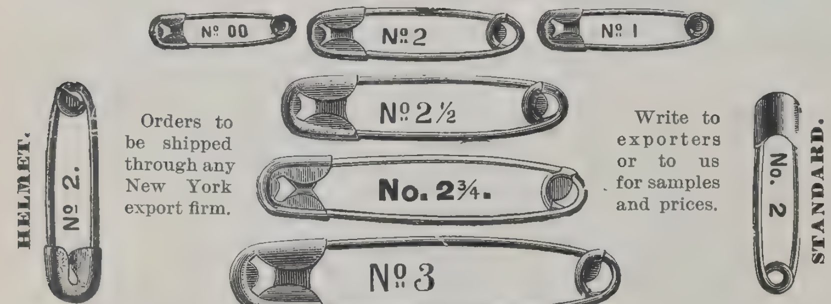
Fitchburg, Mass., U. S. A. 40 Murray Street, New York.

STEWART'S "CONSAPICO" DUPLEX SAFETY PINS



Orders to be shipped through any New York export firm.

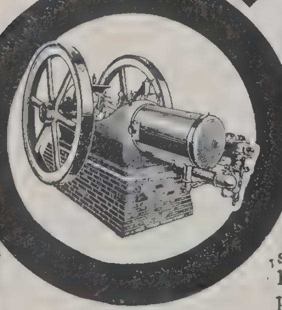
Write to exporters or to us for samples and prices.

HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL MADE IN NICKEL-PLATE AND JET BLACK.

CONSOLIDATED SAFETY PIN CO.,

BLOOMFIELD, N. J., U. S. A.

Olds Gas and Gasoline Engines



Are built on lines of strict originality, and are protected by the Olds patents. The essential parts of our engines combine the highest efficiency with the greatest simplicity of construction and operation. No engine made approaches the Olds for economy and durability.

Stationary Engines, - 2 to 100 H.-P.
Portable Engines, - 8 to 18 H.-P.

Write to-day for full information and new illustrated catalog.

OLDS GASOLINE ENGINE WORKS, 209 River St., Lansing, Mich.

THE INVINCIBLE AUTOMATIC MAGNETIC SEPARATOR.

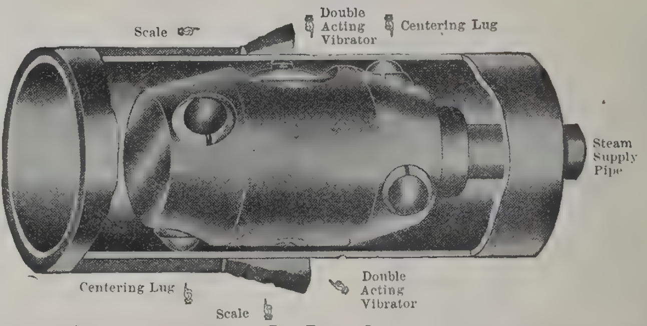
CLEANEST CLEANING INVINCIBLE CLEANERS TRADE MARK

This machine is indispensable to every well-equipped flour mill. It is furnished with electric magnets which capture and remove all particles of iron, iron ore, tacks, nails, etc., automatically, from a flowing stream of grain which does not come in contact with the same. The magnets are sufficiently strong to hold from 20 to 25 pounds each. These machines are made to suit the requirements of the users in 14 different sizes. Send for further particulars, discounts, terms, etc.

The Invincible Grain Cleaner Co.
Silver Creek, N. Y., U. S. A.

European Offices: 37-38 Seething Lane, London, England.

THE "TORPEDO"

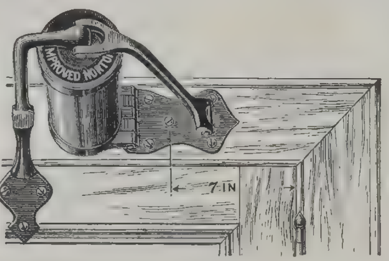


SOLVES THE SCALE PROBLEM.

The "Torpedo" is the latest and most approved machine for removing scale from fire-tube boilers. Operated by steam or compressed air and rapping lightly against the inner surface of the tubes at the rate of 3,000 times a minute, breaks loose and jars off all the scale on the *outside* of the tube. The "Torpedo" has but one moving part, is harmless to the tube and guaranteed to save its cost in fuel within 6 months.

Made in all sizes, from 1½-in. to 8-in. tube. Order sample through any American export house, naming inside diameter of tubes. Write to-day.

The General Specialty Co., 70 Carroll Street Buffalo, N.Y., U.S.A.



NORTON DOOR CHECK CO.

MANUFACTURERS AND EXPORTERS OF THE

IMPROVED

Norton Door Check and Spring.

Our regular checks are made in six sizes, to fit any size door; are either right or left hand and may be applied to either side of a door without change.

Controlled by air and a strong spring. The oldest and most reliable check made. Orders filled through commission houses. Correspondence solicited. Catalogues on application.

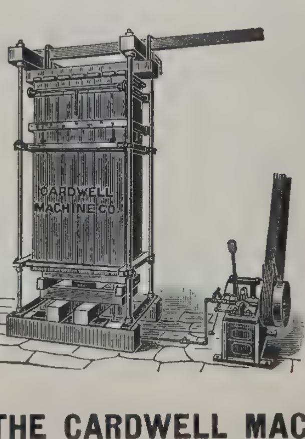
LIST PRICES.

No. 00	$10.00
No. 0	7.00
No. 1	6.00
No. 2	5.00
No. 3	4.00
No. 4	2.00

Subject to Discount.

BOSTON, MASS., - U. S. A.

HYDRAULIC BALING PRESSES.


CARDWELL MACHINE CO.

For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from **$175** to **$350**, according to size.

The Hydraulic Press is the most powerful press made.

COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

Manufacturers of Smoking and Plug Tobacco Machinery.

THE CARDWELL MACHINE CO., Richmond, Va., U. S. A.

HOPS FOR EXPORT

OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., ½ lb. or assorted.

DOLE BROS.' "EXTRA" HOPS—In cases and packets same as above.

DOLE BROS.' "SPECIAL" HOPS—Put up in Duck-wrapped bales containing 10 lbs. each.

ALSO HOPS IN LARGE BALES FOR BREWERS.

Orders promptly executed through the leading commission houses.
Correspondence solicited.

DOLE BROS. HOPS AND MALT CO.,

101 Commercial St., BOSTON, MASS., U. S. A.

EVERY HEEL IS A SALESMAN.

THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

Every Pair Sells from Two to Fifteen Pair.

It is a RECORD and a FACT that one pair of FOSTER HEELS proved so satisfactory to the wearer that 15 pair have been sold on this one party's recommendation.

"ELASTIC TIP CO., Boston:
"Dear Sirs—I have worn your Foster Rubber Heels on slippery pavements, on ice and snow, and they *positively* do not slip. They are *simply perfect*. Yours truly,
"N. E. VAN VOORHIS, Newton."

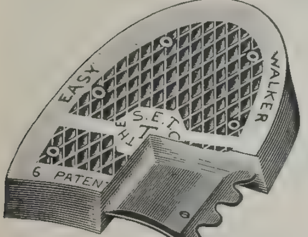
"MERIT ALWAYS WINS"

And **that's why** people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.

FOSTER RUBBER CO., 370 Atlantic Ave., BOSTON, MASS.

The Easy Walker Rubber Heels

Are Acknowledged the Best on Earth by All Practical Shoemakers.



Contain patent spring steel holding plate, which facilitates labor and saves the cost of cement; attached permanently in five minutes; made of fine Para rubber; will outwear two pair of leather heels.

Whole and Half Heels for Men and Women, Largest Line in the World.

Rubber Soling 1/8, 3/16 and 1/4 inch thick.

Orders filled through commission houses. Correspondence solicited.
Booklet "A" on application. Manufactured by

THE SPRINGFIELD ELASTIC TREAD CO.

Springfield, Ohio, U. S. A.

THE SPARROW CO.

MANUFACTURERS AND EXPORTERS OF

HIGH-GRADE CHOCOLATES

Orders Filled Through Commission Houses.

Correspondence Solicited.

Catalogue "S" will be sent on application to interested buyers.

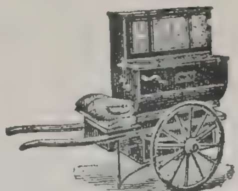
BOSTON, MASS., U. S. A.

GIOVANNI MINA

9 First Street, New York City.

MANUFACTURER OF

CYLINDER PIANOS.



Adapted for Street Use, Merry-Go-Rounds, Pleasure Gardens, Parks, Dancing Halls, Etc.

MANDOLIN PIANOS A SPECIALTY.

There Is Only ONE ALBANY GREASE

This Trademark on every package.

Look out for Yellow Label.

And we are the only Makers.
Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from ¼ to ½ in the cost of lubrication. Oils are advancing and it will pay to use **Albany Grease** at the present prices. Small 4-oz. sample free on application

To introduce abroad [only] will box ready for steamer and deliver in New York sample case of 100 lbs., containing two 10-lb. cans each Nos. 0, 1, 2, 3 and X Albany Compound at $12 American Gold, net. Case measures 36 x 14⅛ x 7⅝; gross weight, 123 lbs. Order direct or through your Commission House.

Cable address: "OEZRIC," New York.

ADAM COOK'S SONS. - 313 West Street, New York, U. S. A.

The Premier American Shoe Polishes

OKOLITE,

An Oily Paste Polish for ALL Black Leathers, Also

Brown Okolite

For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for $12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

The Burckard Blacking & Oil Co., BALTIMORE, U. S. A.

The P. A. Blichert Mfg. Co.

106-108 READE STREET, NEW YORK.

57 Illinois St., Chicago.

THE P. A. BLICHERT MFG. CO.
Patent Leather Polish.
NEW YORK — CHICAGO

MANUFACTURERS OF

POLISHOLA,

The ideal paste for all kinds of black leather shoes.

Patent Leather and Russet Pastes, Empress, Queen and Princess Dressings, Ebony Waterproof Polish.

Also other Polishes and Dressings of every description.

Correspondence solicited in French, German and other languages.

The Best-Selling Shoe Polish

IN AMERICA.

BLACKOLA
FOR LADIES, MEN AND CHILDRENS SHOES AND ALL BLACK LEATHER ARTICLES
TRADE MARK
TO REMOVE THE COVER TURN THE KEY
KEY
BLACKOLA PREVENTS THE LEATHER CRACKING
REQUIRES NO MOISTENING

TO OPEN THE BOX TURN THE KEY.

EVERY BOX HAS OUR OPENING KEY ATTACHED TO REMOVE THE COVER.

BLACKOLA is different from every other shoe polish in quality and convenience.

MANUFACTURED SOLELY BY

THE WORLD POLISH MFG. CO.

Dealers are requested to write for sample.

YORK, PA., U. S. A.

1846—58 YEARS—1904.

THE STEARNS AND FOSTER CO.,

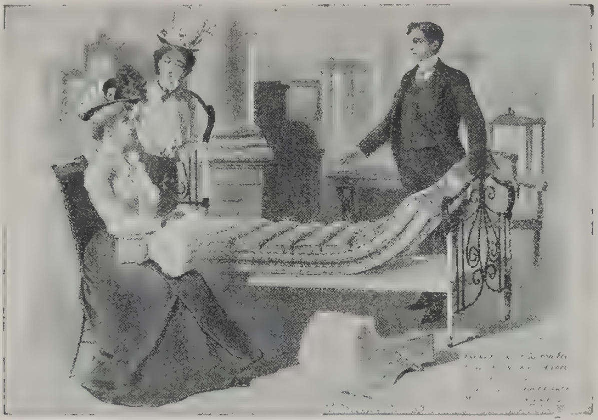
CAPITAL, - - - $1,000,000.00.

MANUFACTURERS OF

Cotton Felt Mattresses

Absolutely Sanitary. Cleaner, sweeter and purer than any other mattres upon the market, as well as being **infallible against dust, germs or water**

NOT AFFECTED BY CLIMATIC CHANGES.



SPECIAL OFFER TO INTRODUCE IN FOREIGN MARKETS ONLY.

Upon receipt of **$32.40** in U. S. gold or its equivalent, we will pack, ready for transportation abroad and delivered f. o. b. New York City, 6 STEARNS AND FOSTER COTTON FELT MATTRESSES. Each special offer order is accompanied by a sample of our mattress for demonstration purposes, as shown in illustration.

Each bale of 6 Stearns and Foster Cotton Felt Mattresses measures 2 feet 6 inches deep, 4 feet 8 inches wide and 6 feet 6 inches long; about 75 cubic feet; gross weight, 282 lbs.

☞ Each mattress is of STANDARD SIZE, 4 feet 4 inches wide, and 6 feet 4 inches long; weighing 45 lbs. Specify STEARNS AND FOSTER COTTON FELT MATTRESSES when ordering.

Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

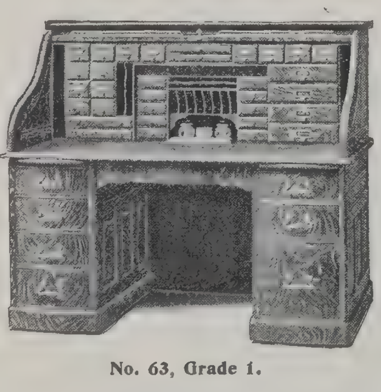
THE STEARNS AND FOSTER CO.

CINCINNATI, OHIO, U. S. A.

MOON DESK CO.

Muskegon, Mich., U. S. A.

Cable Address: "MOON," Muskegon.



No. 63, Grade 1.

Manufacturers of

Roll-Top Desks
Flat-Top Desks
Bookkeepers' Desks
Typewriter Desks
Filing Cabinets
Typewriter Stands
Directors' Tables

No. 63. 60 inches long; 36 inches wide; 52 inches high; weight, 400 pounds.
No. 64. 66 inches long; 36 inches wide; 52 inches high; weight, 430 pounds.

A VERY handsome swell-front desk. Four letter-file drawers with cast brass label-holder pulls, each drawer supplied with index and our special compressing device; 14 cherry pigeon-hole boxes 11 inches deep, with quarter-sawed-oak fronts; pigeon-hole boxes are trimmed with cast brass label-holders and highly polished cast brass knobs; bracket drawers. Large swell-front center drawer.

Pedestal drawers have handsome cast brass ball and socket pulls. No charge for inkwell set.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

MICHAEL'S LAWN SPECIALTIES

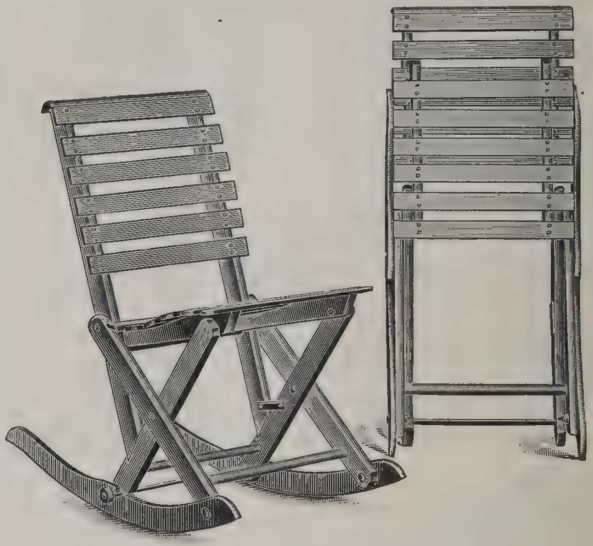
Have been on the market over 46 years, and have successfully stood the test of time.

Our Motto Is: QUALITY in Every Instance.

New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen........................$30.50



Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

Price, per dozen.............................. $9.00

Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen..............................$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen.............................. $6.00

NOTE.—The prices above quoted are f. o. b. New York City.

We also make the Michael Porch and Lawn Reclining Chair.

C. H. MICHAEL MFG. COMPANY,

Cable Address, "Michael." Western Union Code.

LA PORTE, - INDIANA, U. S. A.

MILLER BROTHERS

BUILDERS OF

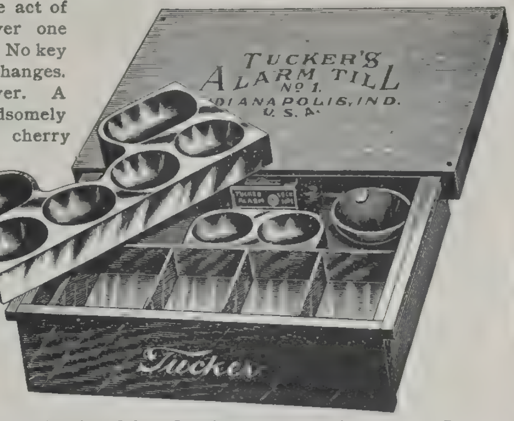
CARRIAGES

IN THE WHITE

Catalogue and Prices on Application

AMESBURY, MASS.
U. S. A.

The Tucker Alarm Cash Till.



A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with.

Delivered (½ doz. in a case) free to vessel. Catalogues in English and Spanish.

TUCKER & DORSEY MFG. CO., Indianapolis, Ind., U. S. A.
Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.

JEFFREY MINING MACHINERY.

S. M. 10, 2-ton Electric Locomotive.

150 K. W.

S. M. 15, 2½-ton Electric Gathering Locomotive.

T. M. 150, 20-ton Electric Mine Locomotive.

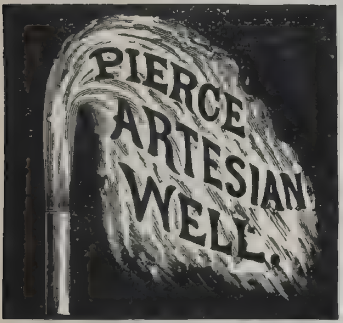
D. M. 40, 7-ton Electric Switching Locomotives.

Generators.
Electric Locomotives.
Coal Cutters.
Drills.
Complete Mine Equipment.

Our Staple Line Includes Elevating, Conveying, Power-Transmission Machinery. Catalogues Free.

THE JEFFREY MFG. CO.
COLUMBUS, OHIO, U. S. A.

Pierce Well Engineering & Supply Co.

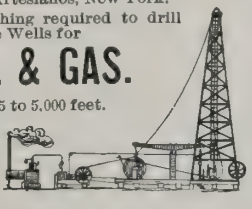

PIERCE ARTESIAN WELL.

136 Liberty St., NEW YORK, U. S. A.
Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.



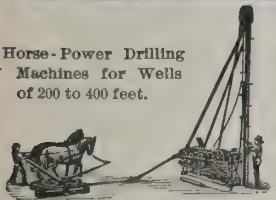
Machine for 2,000 to 4,000 ft.

Also Special Tools for Soundings and Test Borings for **Water** and **Mineral Prospecting and Developing Mines**; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing Tools, Boilers, Engines, Etc.

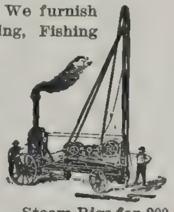
Complete Machines and Experienced Men sent to any Country or Clime. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

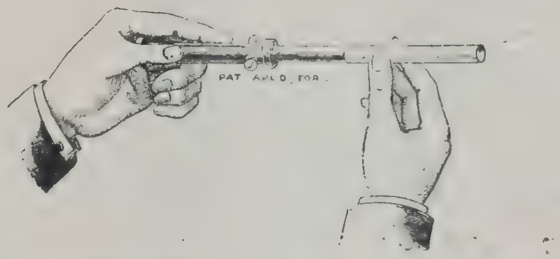
When writing, always state fully what is desired, giving greatest depth of borings required, if in Earth or Rock, and if for Water, Oil, Gas or Minerals.



Horse-Power Drilling Machines for Wells of 200 to 400 feet.



Steam Rigs for 200 350, 600 and 1,000 ft.


PAT. APL'D. FOR.

Imperial Packet Cigarette Machine

GREATEST INVENTION OF THE AGE FOR CIGARETTE SMOKERS.

It enables smokers to make their own cigarettes with tubes which may be bought ready-made. Plain or fancy tips may be used. Different grades of tobacco may be mixed to suit the smoker and 300 per cent. saved.

Upon receipt of $25 in United States gold, or its equivalent, we will box ready for steamer and deliver f. o. b. cars New York, one gross Imperial Cigarette Machines, each in a box with tubes. Agents wanted.

Columbia Machine Works and Manufacturing Co.
330 SEVENTH AVENUE, NEW YORK, U. S. A.

THE S. & P. CHECK PROTECTOR

AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

$5.00

LIBERAL DISCOUNTS TO TRADE.

Net Weight 3¼ pounds.

The S. & P. Pinking Machine

IMPROVED MODEL NOW READY.

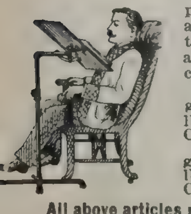
Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

SITTMANN & PITT, Brooklyn, N. Y., U. S. A.

FOR THE HOME, LIBRARY, SICK ROOM, STUDIO, OFFICE, SCHOOL ROOM.

THE STANDORETTE.

TRADE MARK.

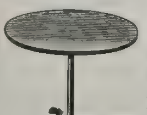


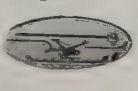
An Invalid's Stand, Easel, Reading Stand, Book Rest, Music Stand, Card Stand, Sewing Stand Drawing Board, all in one handsome piece of furniture. The top can be raised or lowered, and revolves around the pedestal; automatic adjustments for tilting the top at any angle; folds compact for export.

Box containing 6, gross weight, 150 lbs.; net, 100 lbs. Cubic feet, 6 1-2.

Box containing 12, gross weight, 300 lbs.; net, 200 lbs. Cubic feet, 14.

TIP TOP TABLE.





A first-class table, strong in construction, yet very light in weight. A handy table for the home, office, restaurant and summer garden. A half turn of the top places it in a vertical position, therefore occupying little space when set aside. It packs in the smallest space of any table yet designed and is specially constructed for export. The top is 30 inches in diameter: made of 5-ply veneer quartered oak.

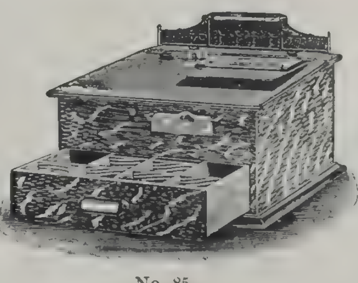
The Allen Shaving Stand.

THE MIRROR is 8 x 10 quartered oak frame.
RAISED OR LOWERED any height.
REVOLVES and TILTS either way.
A PEDESTAL is formed by removing the mirror.
It makes a nice reflector and dressing stand for the ladies.

All above articles made of steel tubing; finished, black enameled, oxidized copper or nickel-plated. Send for full particulars, prices, etc.

D. H. ALLEN & CO., Miamisburg, Ohio, U. S. A.

"SECURITY" Cash Recorder



No. 85.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

Write for Circular and Prices to

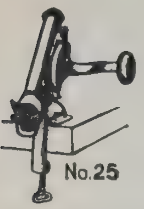
HOUGH CASH RECORDER CO.,
INDIAN ORCHARD, MASS., U. S. A.

A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.

The largest manufacturer of **TOILET PAPER** in the world.

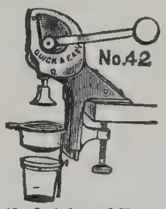
TRADE-MARK REGISTERED.

CORRESPONDENCE SOLICITED.

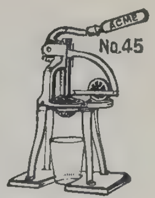


35. Quick and Easy. Cork Puller.

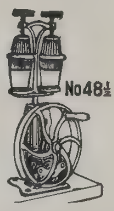
28. Samson Cork Puller.



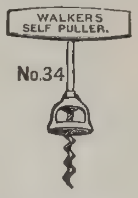
42. Quick and Easy Lemon Squeezer.



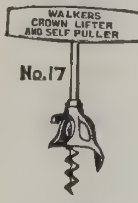
45. Acme Lemon Squeezer.



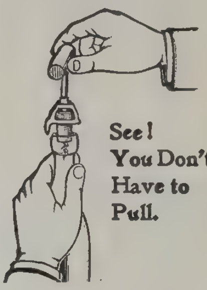
48½. Quick and Easy Shaker.



34. Self-Pulling Cork Screw.


WALKERS CROWN LIFTER AND SELF PULLER
No.17

17. Self-Pulling Cork Screw.

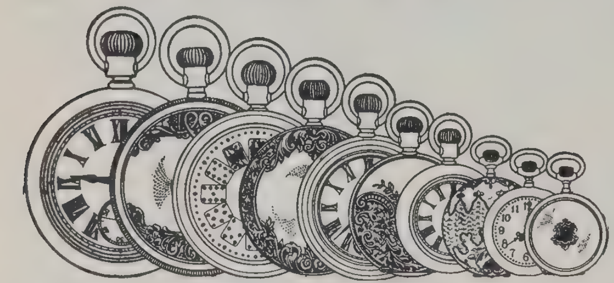


See! You Don't Have to Pull.

48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.



New England Watches

have a world-wide reputation and are made to suit all sorts and conditions of people.

Export Catalogue in English, French or Spanish sent on application.

THE NEW ENGLAND WATCH CO., - Waterbury, Conn., U. S. A.

THE NEWARK LEATHER WASHER MFG. CO., NEWARK, N. J., U. S. A.

MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

Axle Washers for All Foreign and Domestic Axles. All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses. Correspondence Solicited. Catalogue B on Application.

BOSTON FLOOR COMPANY, Boston, Mass., U. S. A.

—MANUFACTURERS AND EXPORTERS OF—

PARQUET FLOORS AND FLOOR FINISHES,

Also Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

Orders filled through commission houses. Correspondence solicited.

EDWARD M. BLISS,

MANUFACTURER AND EXPORTER OF

LAMB'S WOOL SOLES

AND HAND-CROCHETED WORSTED SLIPPERS IN ALL COLORS AND SIZES.

Ladies in the United States buy the wool soles, crochet and sew the upper onto the sole, thereby making their own slippers for house wear. Invaluable for invalids. Orders filled through commission houses, Correspondence solicited.

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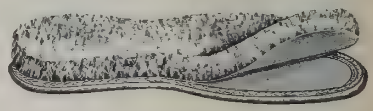

J. C. F. PHINNEY, CUT SOLES, LYNN, MASS., U. S. A.

**Orders filled through commission houses.
Correspondence solicited.**

Brockton Last Co.

Manufacturers and Exporters of FINE **LASTS** IN ALL SHAPES AND STYLES,

FOR MEN, WOMEN, YOUNG MEN AND MISSES.

Orders filled through commission houses. Correspondence solicited.

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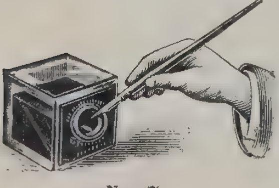


No. 7.

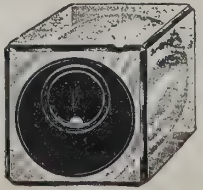
A FEW REASONS WHY

THE GARDNER

Is the Best Inkstand in the world.

The Gardner Inkstand is superior to any other make, for the following reasons: 1—It provides against evaporation, which soon earns its cost by the saving in ink. 2—Its peculiar construction prevents dust and dirt from getting in the ink, allowing it to retain its freshnes as long as it lasts. 3—Absolute simplicity—there being nothing to get out of order.

Prices, 65c. to $1 35 each.



No. 3.

THE ROYAL INKSTAND.

In point of simplicity, the ROYAL INKSTAND has no superior. Besides the glass reservoir, it is composed of only three parts—a rubberoid collar and an ink funnel and an arched diaphragm of soft rubber. These parts are all readily removable and easily separated from one another, without tools and without soiling the fingers.

No. 309. Royal, 25c. each.

Very Liberal Export Discounts.

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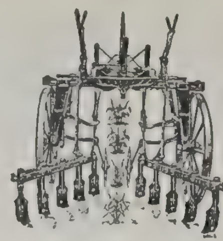
No. 30

Office:
COFFEE EXCHANGE,
NEW YORK.

Hench, Dromgold & Co.

MANUFACTURERS OF

Agricultural Implements & Machinery



Factory:
YORK, - PENNA.

Cable Address:
"Adverbial," New York

ELECTRICAL APPARATUS FOR ALL PURPOSES

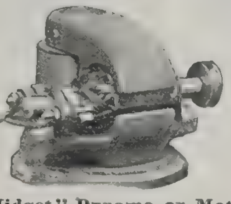
SPECIAL OFFERS FOR EXPORT ONLY.

Type "R," Sparking Dynamo.
Price, each, - $15.50

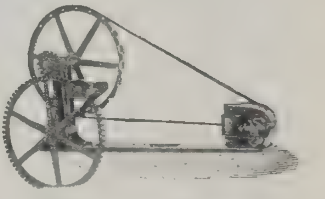
Type "B," Dynamo or Motor.
Price, each, - $26.50

The prices here quoted are packed, ready for shipment abroad, and delivered f. o. b. New York, Boston or Philadelphia.

☞ Our Bulletins, illustrating and describing the various styles of **Electrical Experimental Apparatus** made by us, mailed postpaid.

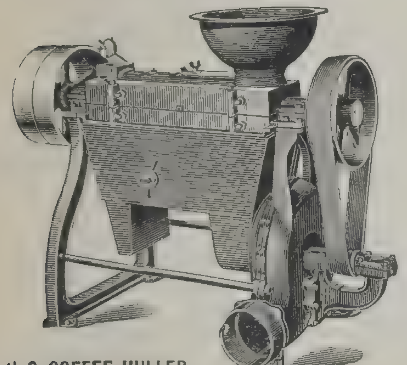


"Midget" Dynamo or Motor.
Price, 6, - - $18.00

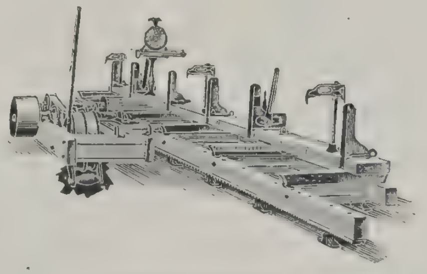


"Midget" Dynamo or Motor, with hand power.
Price, 6, - - $34.50

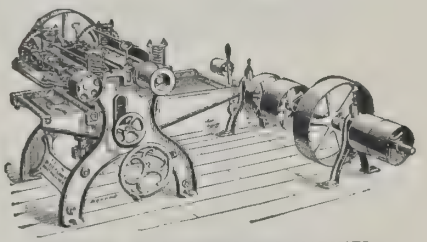
THE ELBRIDGE ELECTRICAL MFG. CO., Elbridge, New York, U. S. A.



U. S. COFFEE HULLER.



CIRCULAR SAW MILL.



20-INCH DIXIE PLANER AND MATCHER.
For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

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P. AUBECK, Mgr.

SALEM IRON WORKS, Winston-Salem, N. C., U. S. A.

AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

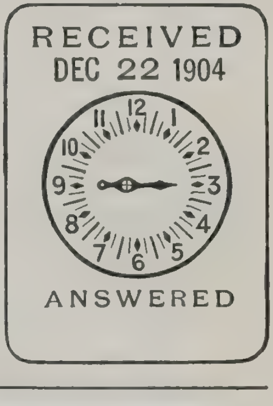
This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

Price, with dates and printing die, as illustrated, or with any other wording that may be desired, **$3.50.**

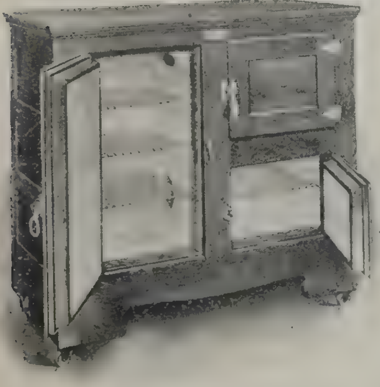
A. A. WEEKS, 11 Gold St., New York, U. S. A.

Manufacturer of Glass and Iron Inkstands and Office Stationery.

Send for Catalogue and Export Discounts.



MONROE PORCELAIN REFRIGERATORS.



Monroe Refrigerator No. 21. Style D.

THE MONROE IS A HIGH-GRADE REFRIGERATOR BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in **one solid piece of porcelain**. **The corners are rounded** There are no joints or crevices for the food to decay in. **The porcelain is white, durable,** and as easily cleaned as a china dish. **The ideal house refrigerator, absolutely sanitary.** The prices here quoted **for foreign markets only** (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, Oak Exterior, **$54.00**
Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

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Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of **Solid Porcelain Refrigerators** made by us, mailed postpaid.

☞ Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, kindly mail us duplicate of order.

Specify "**MONROE.**"

Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, **LOCKLAND, OHIO, U. S. A.**

LOW C, 32 FOOT REED

Church, Chamber and Concert Pipe Organ Reeds

A SPECIALTY.

Workmanship and Tone Quality Unexcelled.

Samuel Pierce Organ Pipe Co.,

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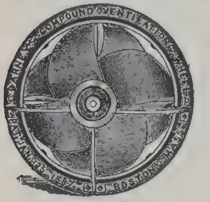

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For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in France, Canada, Mexico.

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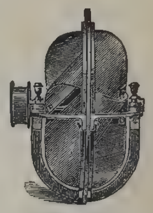

THE DAVOL RUBBER COMPANY, Providence, R. I., U. S. A.

Manufacturers of the HIGHEST GRADE OF RUBBER GOODS.

Air Beds,
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Air Pillows,
Atomizers,
Bands,
Bandages,
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Bed Pans,
Breast Pumps,
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Camera Sets,
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Cupping Cups,
Dental Dam,
Dilators,
Face Bottles,
Finger Cots,
Gas Bags,
Gloves,
Ice Bags,
Ice Caps,
Medicine Droppers,
Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,
Obstetrical Cushions,
Pessaries,
Plant Sprinklers,
Plaster Bowls,
Politzer Bags,
Rectal Tubes,
Rubber Bands,
Stomach Tubes,
Stoppers,
Syringes,
Teething Pads,
Teething Rings,
Tourniquets,
Tubing,
Umbrella Rings,
Urinals,
Water Bags,
Water Beds,
Water Bottles.

And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

SILVER LAKE COMPANY, The Original Manufacturers of Solid Braided Cordage.

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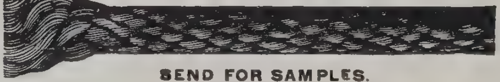
WINDOW SASH CORD,
RAILROAD BELL CORD, } COTTON, LINEN OR ITALIAN HEMP.
ARC LIGHT and TROLLEY CORD.



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THE BEST IS THE CHEAPEST:

CLOTHES LINES,
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CHALK LINES, ETC., ETC.

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SPECIAL OFFER ON TRIAL ORDER FOR EXPORT.

One each 4 Burner and Oven, and 2 Burner and Oven Acetylene Ranges. One each 1, 2 and 3 Burner Acetylene Hot Plates. One 4-Tube Acetylene Radiator. One Acetylene Mantle Burner, complete.

All the above sent carefully crated and boxed upon receipt of $50.00, current United States funds. Catalogue "C" on application.

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Western Union and Postal Codes.

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☞ Every Piece Manufactured by Us Fully Guaranteed.

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SAMSON CORDAGE WORKS, - Boston, Mass., U. S. A.

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ESTABLISHED 1895.

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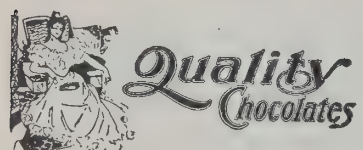

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EDISON LABORATORY PRODUCTS.

All goods bearing the name of Thomas A. Edison are everywhere recognized as the best of their kind. For that reason **Edison Phonographs and Records, Edison Kinetoscopes and Films, Edison Primary Batteries and Fan Motor Outfits, Bates and Edison Hand Numbering Machines** (both of the latter being made at the Edison Laboratory) are desirable lines for dealers in all parts of the world to carry.

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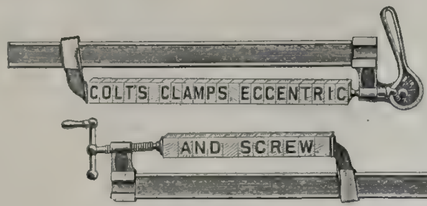
Colt's Eccentric and Screw Steel Bar Clamps.

Quick Acting.

Time Saving.



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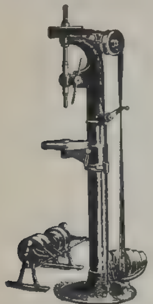

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Drills for Hand and Power. Clamp Drills, 2 styles, 4 sizes. Turret Drills. Bench Drills. Track Drills. Drills with 1 to 10 spindles for ⅜-inch holes, with hand or power feed. Nut Tappers with 2, 3 and 4 spindles. Planer Chucks, round and square base, with jaws 6 in. to 30 in. long.

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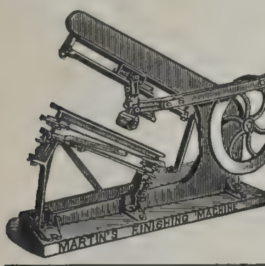
Martin's Jack for Finishers of Leather.



It leads all rivals. Compact, simple, easy and silent action. Quickly adjustable. Quantity and quality of work unequaled. High rate of speed.

Will set out, pebble, "stone out" and glass in black and paste. Using either oil or soap blacking entirely without hand labor.

For morocco or lining finishers, the Martin Jack will glaze, roll, pebble and glass out superior to other machines. Agates, Glasses, etc , in stock.

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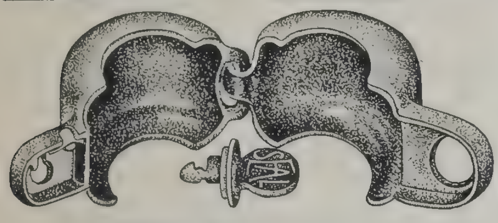

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The **Columbus Meter Seal** insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

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FIRE LOSS

PREVENTED BY THE USE OF

Badger's Fire Extinguishers

In Use All Over the World.

For full particulars apply to

E. B. BADGER & SONS CO.
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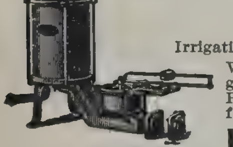

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PUMPS WATER BY WATER POWER.

Irrigation with Rife engines. Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4.000 engines successfully working.

RIFE ENGINE CO., 126 Liberty St., New York, U.S.A.

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Cable Address: "Computico, N. Y."

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Discounts on Application. Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING ❧ CHECK AND STRIP PRINTING ❧

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil); 6.1 cu. ft. (172 cu. met.). Order direct or through any reliable exporter.

Just the Thing for the Kitchen.

PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

Write for catalogue and discount.

Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2½ ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.

Paul Kitchen Cabinet No. 50.

PAUL MANUFACTURING CO., Fort Wayne, Indiana, U. S. A.

The "RELIANCE" Automatic Numbering Machine Price, $5.

Discount, 30 Per Cent. in Lots of 1 Doz.
(Six Wheels) Numbers from 1 to 1,000,000

This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.

No rubber used in the construction, and every machine is sold with our guarantee. Style of imprint:—

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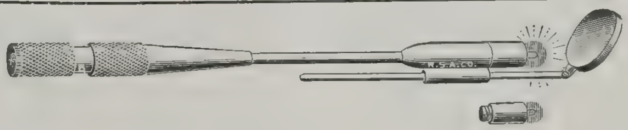

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Diagnostic Instruments,

With COLD LAMPS.

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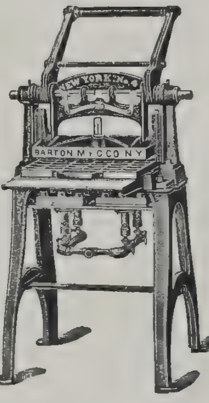
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MAKE RUBBER STAMPS.

IT IS A PROFITABLE BUSINESS.

Our Vulcanizers and Outfits are in use throughout the world.

SPECIAL EXPORT OFFER.

Upon receipt of any of the following amounts in U. S. gold or its equivalent, we will box and ship through any commission house, f. o. b. New York.

For **$25.**	**Outfit AA.** Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture $75 worth of Rubber Stamps.
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For **$100.**	**Outfit EE.** Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture $300 worth of Rubber Stamps.

With each outfit are sent complete instructions for operating. Catalogue and Price Lists sent upon request.

Barton Mfg. Co., 335 Broadway, New York.

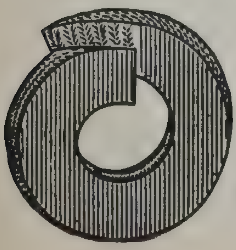
W. R. EATON COMPANY

Manufacturers and Exporters of **HIGH-GRADE CHOCOLATES**

In Five-Pound Boxes and Fancy Packages.

Orders Filled Through Commission Houses. Correspondence Solicited.

BOSTON, MASS., U. S. A.



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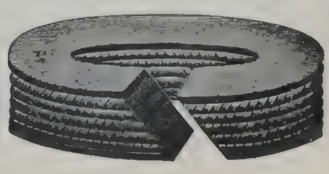
ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

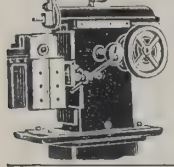
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM
SELF-LUBRICATING, STEAM AND WATER TIGHT.



Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE GOULD PACKING COMPANY, **EAST CAMBRIDGE, MASS.** ALBION CHIPMAN, TREAS.



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Manufacturer and Exporter of

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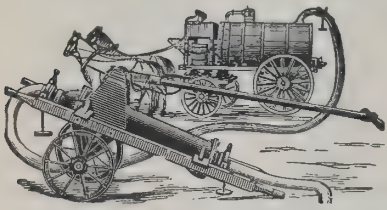

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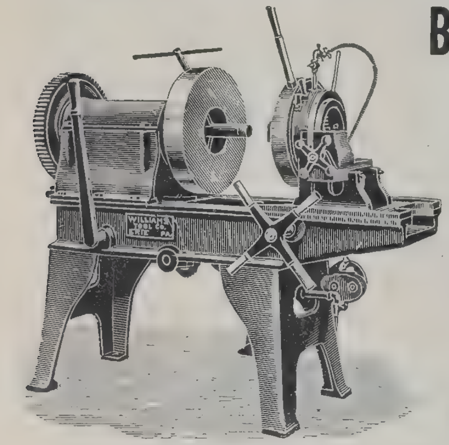

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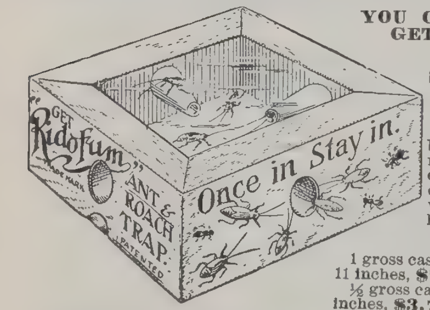

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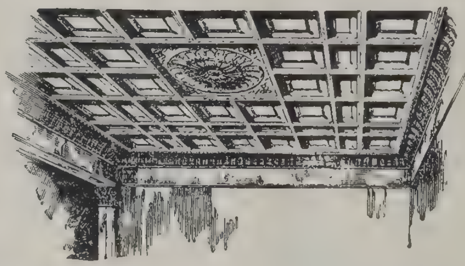

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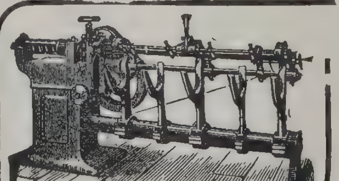

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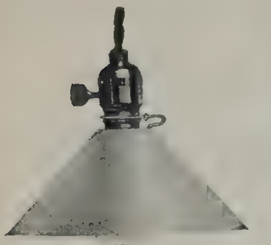

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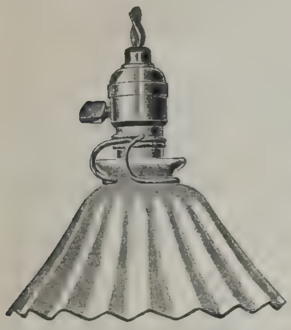

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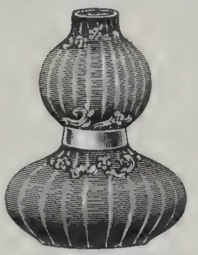

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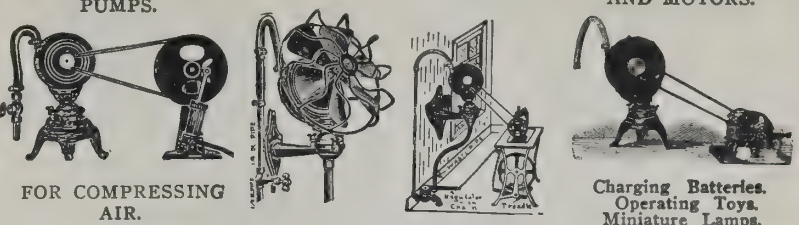

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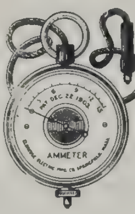

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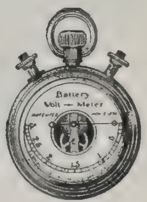

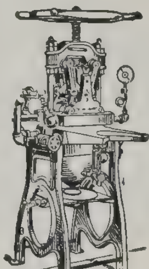

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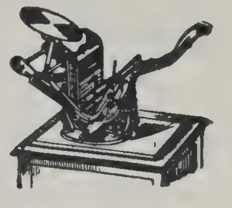

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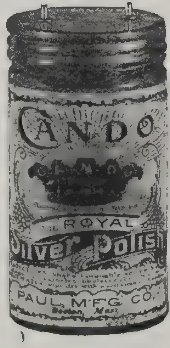

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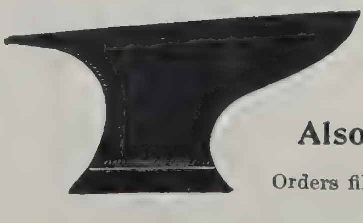

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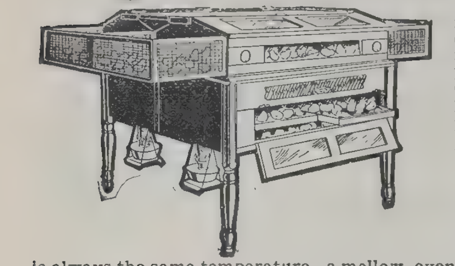

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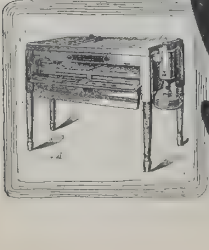

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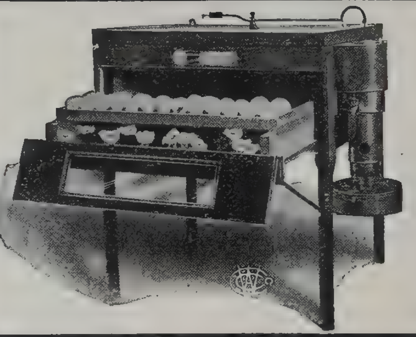

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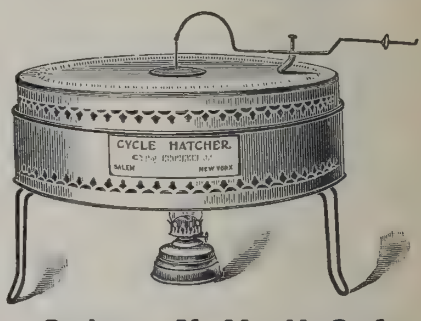

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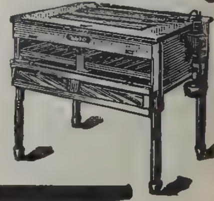

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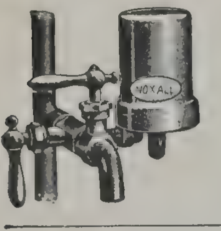

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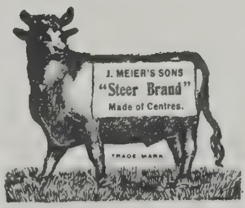

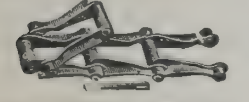

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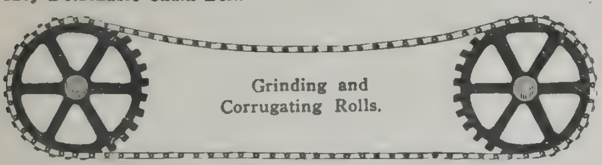

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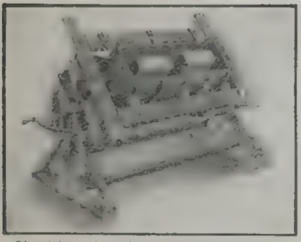

Machine showing rocked position.

The WINGET CONCRETE MACHINE CO.

COLUMBUS, OHIO, U. S. A.,

MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

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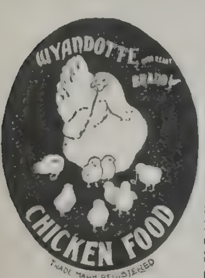
In order to facilitate our increasing export business, we desire to establish an agency with one responsible firm in each trade centre of the world.



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MANUFACTURERS AND EXPORTERS OF **CHICKEN FOODS,**

Wish to call the attention of foreign importers to their

"WYANDOTTE" CHICKEN FOOD,

largely used in the United States by those who raise chickens either for pleasure or profit. It is a cheap, nutritious food; superior to any kind of grain or wet food for young chickens or for poultry. Send a trial order and you will become a permanent customer. Order through any responsible commission merchant. Send for Catalogue "R." Address as above.

Henry W. Peabody & Co., New York Agents for Australia and New Zealand

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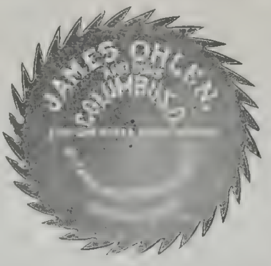
All Languages,

By the Translation Bureau of
THE AMERICAN EXPORTER,

BENNETT BUILDING,
NEW YORK CITY.



WHEN YOU NEED A RELIABLE

Solid or Inserted Tooth Circular Saw,

HAND, CROSS-CUT OR BAND,

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JAMES OHLEN & SONS SAW MFG. CO.,
Columbus, Ohio,
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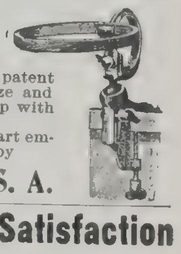
These saws are warranted in every way. They are backed by an experience of more than half a century. Ask for Catalogue No. 52 and Watch Charm.

WANTED **Agents to sell our Whale Art Embroidery Needles,** which do elegant work on any woven goods, making beautiful raised figures of birds, animals, flowers and many useful articles to ornament the home. Any person can use it and do the work ten times faster than by hand. This is one of the easiest and most rapid money-making propositions in the market. Our agents are making rapid sales and big money wherever they offer the Needles No experience is required to make a success. We furnish the outfit and full instructions with the first dozen Needles, so our agents are at once fully qualified to begin work and are assured of a handsome income. Send for a sample dozen Needles and terms on large quantities. We send sample dozen for $2.70. Our $3.00 White Rabbit. Sofa Cushion and other samples of the work we furnish FREE to agents make it a pleasure to sell the Needles. **WHALE ART CO., 527 Bates St., St. Louis, Mo. U. S. A.**

PRISCILLA



Embroidery Hoops, Hoop Holders, Sets and Novelties, embracing new and novel ideas for embroidery workers. Our hoops, 4, 5, 6, 7 and 8 inches, are full 1-2 inch made from the best hard wood; nicely finished; fitted with our patent expanding and contracting devices. Hoop Holders finished in Tuscan bronze and nickel-plate. Sets consist of 1 Universal Hoop Holder, 1 Special Yoke, Hoop with strap 10, 12 or 15 inches.

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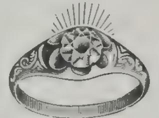
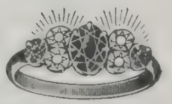
Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.



In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for $10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.



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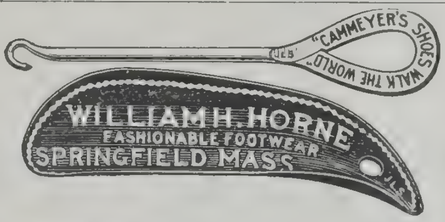

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Button Hooks, Shoe Lifts, Letter Openers, Key Rings, Etc.

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Not a Screw.

Quick as a Wink Cork Puller.

Does not damage the cork, and easily opens bottles of all sizes and recorks them with equal facility. A child can easily operate it. A nickel-plated shield goes with the best 25-cent puller, so that it can be carried in the pocket as easily as a knife. Orders filled direct or through commission houses. Send for circular.

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The Fletcher Manufacturing Co.

Manufacturers and Exporters of

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The Fletcher Watch-Case Protector,
The Springfield Picture Top Box.

All styles and designs made to order. Orders filled through commission houses. Correspondence solicited.

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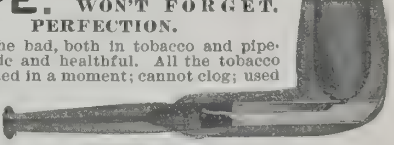
SIMPLICITY. UTILITY. PERFECTION.



A pipe that gives all the good, eliminating all the bad, both in tobacco and pipe. Nicotine cannot get to the mouthpiece. Hygienic and healthful. All the tobacco burns clean to the bottom of the bowl; can be cleaned in a moment; cannot clog; used with or without a cartridge. It has removable cartridge holder. Never can become strong, as it is lined with pure aluminum, which is non-corrosive and tasteless. A FREE, COOL, SWEET SMOKE ALWAYS. Sent postpaid with a box of cartridges for 75 cents. Discount to dealers.

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PAUL MANUFACTURING CO.,
FORT WAYNE, INDIANA, U. S. A.

A Fly Repellant.

Sample gallon can, $1.50.

Send for booklet giving particulars.

"NO-FLIES-HERE"

THERE IS NOTHING TO EQUAL IT.

Keeps Flies, Ticks and Insects off of Cattle, Horses, Mules, etc. Increases health and insures better work from Animals.

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THE JOHN C. COCHRAN CO.

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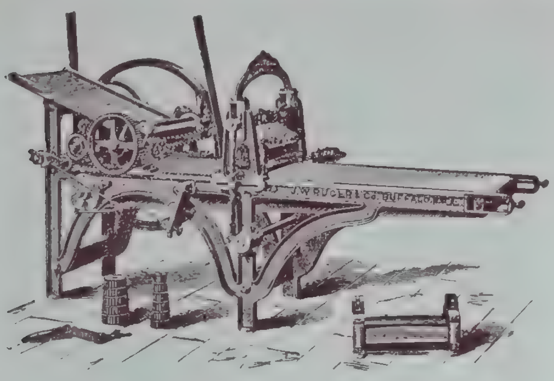

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HAND-POWER BISCUIT MACHINE.

Has patent connecting rod, adjustable cutter arm, is heavily geared and has the improved positive-feed motion.

Length, 9 feet; width, 3 feet 3 inches; rollers, 16¾ inches wide, 4 inches in diameter; speed, 60 revolutions per minute; weight, 1,375 lbs.

PRICE, WITH SODA CUTTER, $325.00.

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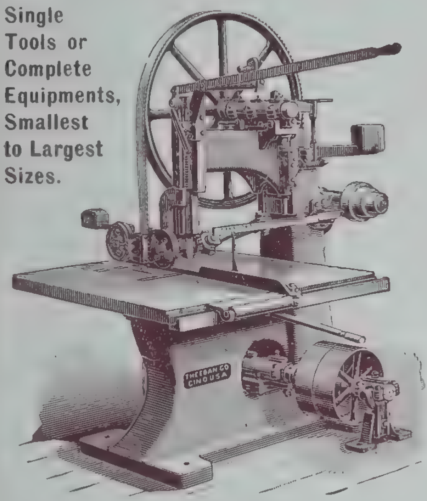
THE J. W. RUGER MFG. CO., Buffalo, N. Y., U. S. A.

Single
Tools or
Complete
Equipments,
Smallest
to Largest
Sizes.



No. 1 New Band Rip Saw.

WOOD-WORKING MACHINERY.

DO YOU RIP MUCH LUMBER?

A Good Saw Is to USE a Good Saw. Another: The Proof of a Machine is in the Trial.

And as the judge of this trial is the user, we'll convince you through him. Convince you that if you have lumber to rip on a small or large scale you are not meeting with the success of your competitor who uses our Band Rip Saws; and that if you are sticking on by the skin of your teeth and don't know what decent profits are, it's because you're using—well, any old tools—you're not using ours.

1. Concerning **Economy,** your competitor says: "The circular saw cannot compare with it, as this Band Rip Saw produces TEN TIMES MORE WORK with much more satisfactory results, and at LESS EXPENSE. Would not be without it for treble its cost."

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3. Concerning **Safety,** your competitor says: "We are pleased to state that the Band Rip Saw, which we are using as a Bolter, is the best machine for the purpose we have ever seen. It can be operated with ABSOLUTE SAFETY, hence it GIVES THE OPERATOR CONFIDENCE, and thereby gives an increased output."

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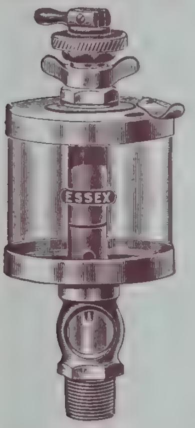
Send for Circulars, New Catalogue, Band Saw Book, or Books on Spoke Lathes and Sanders. Any free on receipt of postal. Send it now!

J. A. FAY & EGAN CO., W. 164-184 FRONT ST., **Cincinnati, Ohio, U. S. A.**

ESSEX'S STANDARD STEAM-ENGINE LUBRICATORS.



Essex "Pilot"
Snap Lever, Sight Feed
Glass Oil Cup.

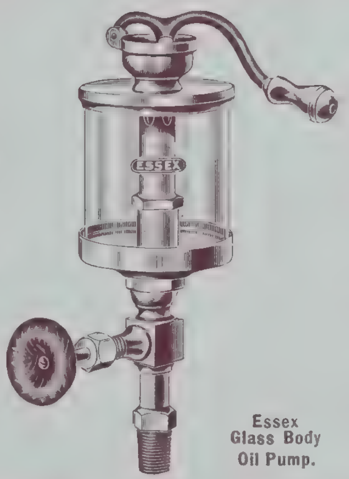
"Simplicity Is the Essence of Durability and Economy."

Such are the ESSEX LUBRICATORS, having few parts (none complicated), made by skilled mechanics, of the best material obtainable; and **each lubricator thoroughly tested before leaving our factory.**

OUR 1904 CATALOGUE, illustrating and describing the many styles of LUBRICATORS made by us, mailed postpaid to all parts of the world.

We carry a large stock and make Quick Delivery.

☞ Ninety per cent. of automobile makers in the United States of America use exclusively the Essex Automobile Lubricators.



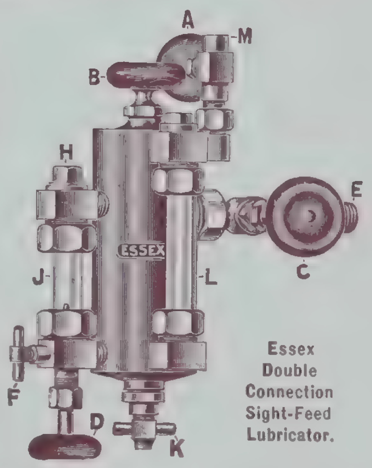
Essex
Glass Body
Oil Pump.

SIGHT-FEED LUBRICATORS, OIL CUPS, OIL PUMPS, OILING DEVICES, GREASE CUPS.

Note.—With the view of facilitating our increasing EXPORT TRADE, we desire to communicate with one energetic merchant in each trade center of the world.

Prices Quoted F. O. B. New York.

Specify ESSEX when ordering. Orders received through export houses. When ordering, to prevent delay and error, please mail us duplicate of order.



Essex
Double
Connection
Sight-Feed
Lubricator.

THE G. B. ESSEX BRASS CO. Manufacturer, DETROIT, MICH., U. S. A.

PELTON WATER WHEELS

PELTON WHEELS IN BOLIVIA.

Six thousand miles of steamer and teaming were necessary to install Pelton Wheels in La Paz, Bolivia, South America.

La Paz is a city of wealth and importance, being the center of Bolivian trade in cuca and cinchona, and a distributing point for Paraguay tea, gold, bark and European goods.

The E. Basadre Forero Company must have been well impressed with the merits of the Pelton Wheel to encounter the difficulties of transportation—the inconvenience and time necessary to secure wearing parts, should these be required; the fact that the Pelton Wheel is used in every civilized country about the globe—all of these favorable points, and more, must have decided this company's preference. *Send for 88-page book on water wheels and water power.*

THE PELTON WATER WHEEL CO., 150 Liberty Street, New York.
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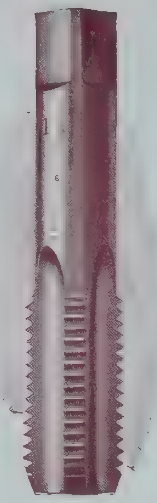

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TAPS, DIES, REAMERS, MILLING CUTTERS, RATCHET DRILLS, BOILER PUNCHES, TAPER PINS, GAUGES, ETC.

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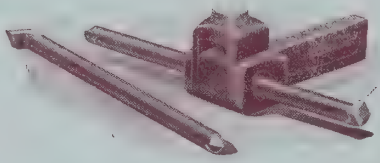

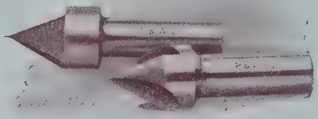

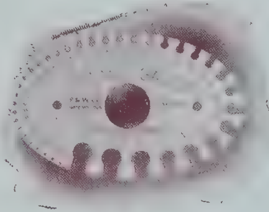

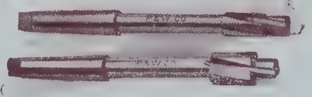

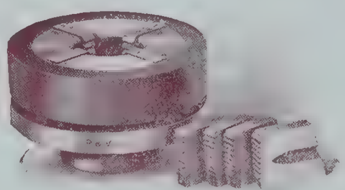

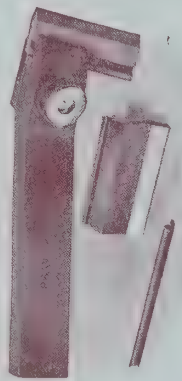

PRATT & WHITNEY CO.

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LANE MANUFACTURING CO., Montpelier, Vermont, U. S. A.

MAKERS OF

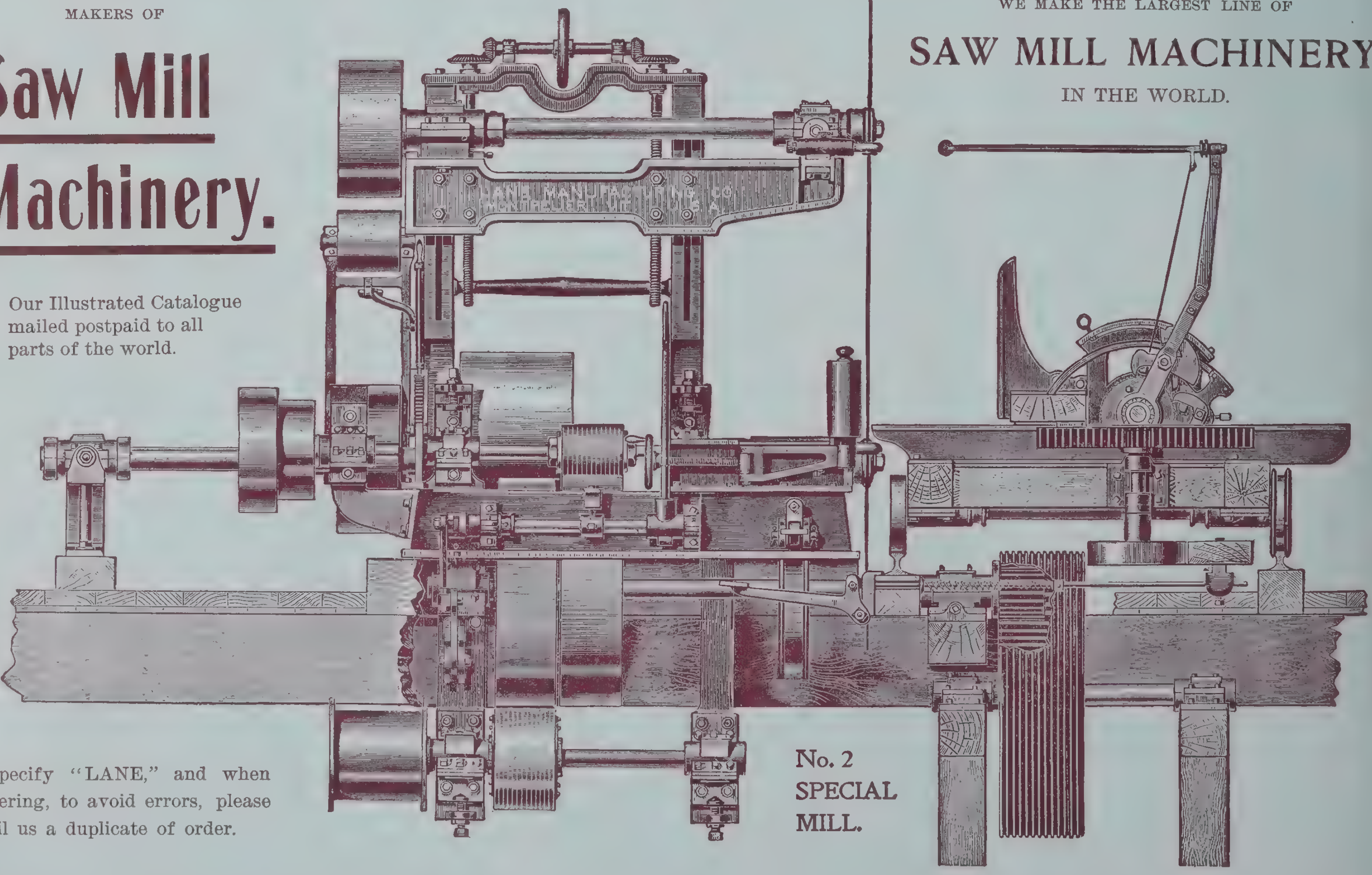
Saw Mill Machinery.

Our Illustrated Catalogue mailed postpaid to all parts of the world.

WE MAKE THE LARGEST LINE OF

SAW MILL MACHINERY

IN THE WORLD.


LANE MANUFACTURING CO.
MONTPELIER, VT. U.S.A.

No. 2 SPECIAL MILL.

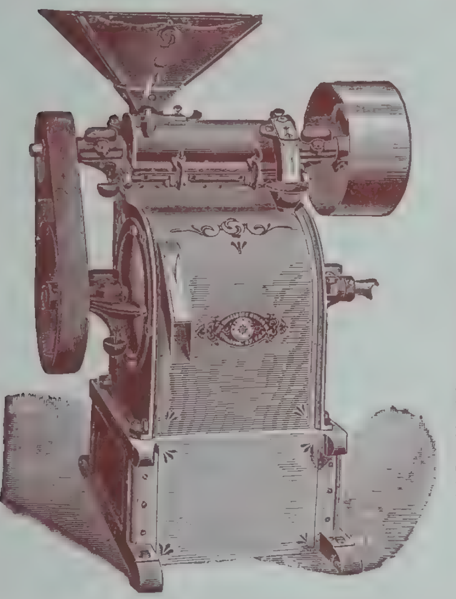
Specify "LANE," and when ordering, to avoid errors, please mail us a duplicate of order.

The American Exporter

WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LV. NEW YORK, FEBRUARY, 1905. No. 3.

Rice and Coffee Hulling Machinery



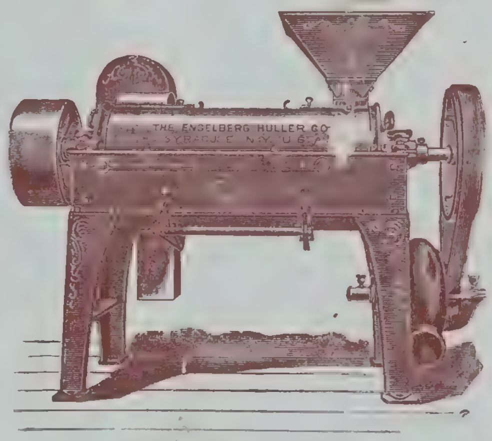
Improved Rice Huller and Polisher.

OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.

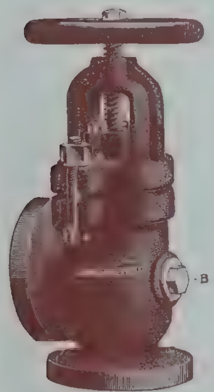


Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B, Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.

LUNKENHEIMER "DURO" BLOW-OFF VALVE.

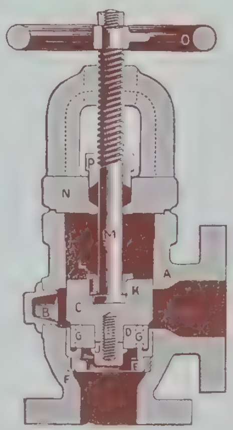


A valve with self-cleansing seat, simple and practical in construction and entirely different from all other blow-off valves in the market.

The way the "Duro" is built no scale or sediment can lodge on the seat. If you want a practical success and a Valve that will last as long as the boiler, you want the "Duro." No boiler should be without one.

Made in screw ends, flange ends and screw and flange ends, in 1¼, 1½, 2, 2½ and 3 inch sizes. Every valve rigidly tested and inspected before shipment. Specify the "Duro" and order from any leading export house.

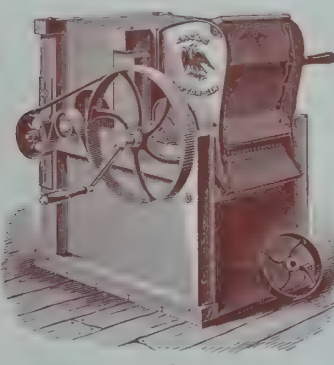
Write for Catalog of Brass and Iron Steam Specialties and Engineering Appliances of Superior Quality.



THE LUNKENHEIMER COMPANY, Sole Makers,
CINCINNATI, O., U. S. A.

BRANCHES:
New York, 26 Cortlandt Street.
Philadelphia, 1428-32 Callowhill St.
New Orleans, Tulane-Newcomb Bldg.
London, 35 Great Dover Street, S. E.
Paris, 24 Boulevard Voltaire.

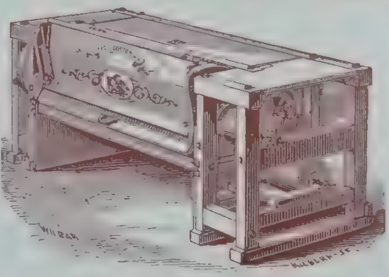
EAGLE COTTON GINS.



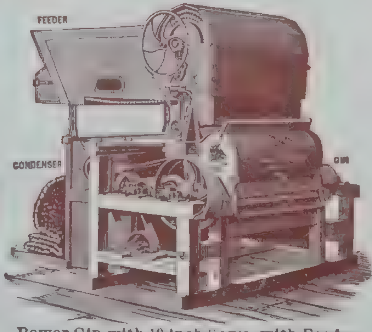
Hand Gin.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO., BRIDGEWATER, MASS., U. S. A.

Another Indorsement.

THE GRAND PRIZE

AND

TWO GOLD MEDALS

AWARDED US BY THE

Louisiana Purchase Exposition

confirms in every detail our claims regarding the IMPROVED WOOD and NEW GROOVE TIN and general mechanical perfection of our rollers.

STEWART HARTSHORN CO.

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ADDITIONAL FACTORIES:
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We Make All Practical Accessories for Shade Rollers.

DIETZ
New Junior Lanterns

(Cold Blast), For Kerosene

These Lanterns (and our No. 1 and No 2 Cold Blast Lanterns) are what users have wanted for a long time—lanterns which the strongest wind will not affect. They burn with an intense white flame and give almost twice the volume of light of an ordinary lantern.

They are by far the handsomest and most reliable lanterns on the market. The Junior is equipped with a ⅝-in. burner, Junior Globe, and a most effective and convenient device for raising and lowering the globe.

These lanterns are the result of 65 years of lantern making, and in placing them on the market we are sure they will add greatly to our already enviable reputation in this line.

We are the largest lantern manufacturers in the world and consequently have the best facilities for turning out perfect goods and making prompt shipments. All our methods and machinery are up to date, and our long experience with the export trade enables us to handle the largest orders with perfect ease.

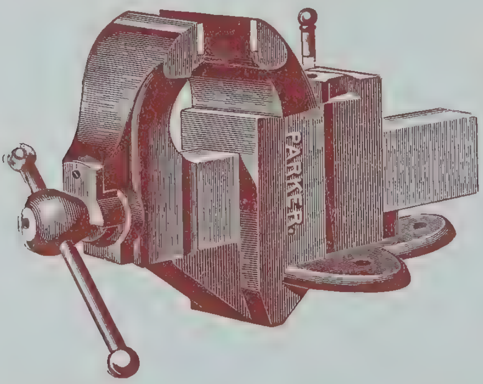
These Lanterns Are Made in 4 Different Styles:

	List, doz.
Junior Tubular Lantern (Cold Blast), Bright Tin,	**$12.00**
Junior Dash Lamp (Cold Blast), Bright Tin,	**$15.00**
Junior Lantern (Cold Blast), entirely of Brass,	**$18.00**
Junior Lantern (Cold Blast), Brass, Nickel-Plated,	**$22.00**

Packed 1 Dozen Each in a Case. Discount for Export, 50 and 10%

We will be pleased to send you pro-forma invoice showing cost of 1 gross of any of the above, laid down in your port, or any other lantern you may select in our catalogue (English or Spanish), which we will mail upon request.

R. E. DIETZ COMPANY, 60 Laight St., NEW YORK, U. S. A.
Established 1840.



THE

Parker Vise

Unequaled for Strength, Durability and Finish.

Has stood the test of over 50 YEARS.

EVERY VISE MADE FOR SERVICE.

The Parker Coffee Mills.

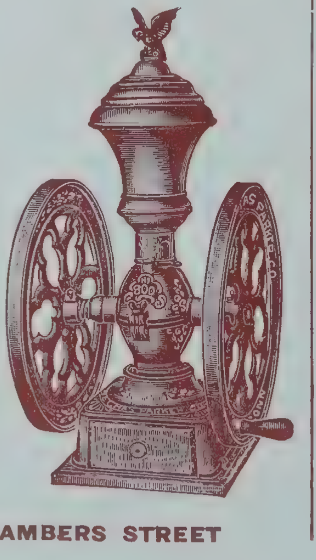
ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over **60 YEARS** and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.



THE

CHAS. PARKER CO.,

MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET

ARCADE MANUFACTURING CO.

(INCORPORATED 1885)

Manufacturers of

"X-RAY," "ROYAL POUND," "CRYSTAL," "IMPERIAL," "TELEPHONE," "JEWEL," "NEW HOME" and "FAVORITE"

Coffee Mills.

ALSO

"Champion," "Handy" and "Phoenix"

CORK PULLERS

AND

"Perfect" Lemon Squeezers.

"X-Ray" Coffee Mill.

"Royal Pound" No. 077.

No. 1 X-Ray, a one-pound Wall Mill of entirely new design. Easily fastened to the wall, requiring but four screws. Will grind fine or coarse as desired. Coffee always in sight.

Sample Dozen, boxed ready for steamer f. o. b. cars New York, **$9.30.**

Size of box, 14x14½x21 in. Weight: gross, 60 lbs.; net, 45 lbs.

Royal Pound No. 077, the latest Wall Mill. Made of cast iron, finished in black enamel. Fancy embossed sheet-metal hopper, holding a pound of coffee air-tight. SELLS AT SIGHT. **Sample Dozen**, boxed ready for steamer, f. o. b. cars New York, **$9.05.** Size of box, 12¼x16x20 in. Weight: gross, 56 lbs.; net, 40 lbs.

Orders received through export houses. Please mail duplicate order to us. Our illustrated catalogue mailed postpaid. Discount to the trade.

ARCADE MANUFACTURING CO., Freeport, Illinois, U. S. A.

Hardware Specialties Manufacturers.

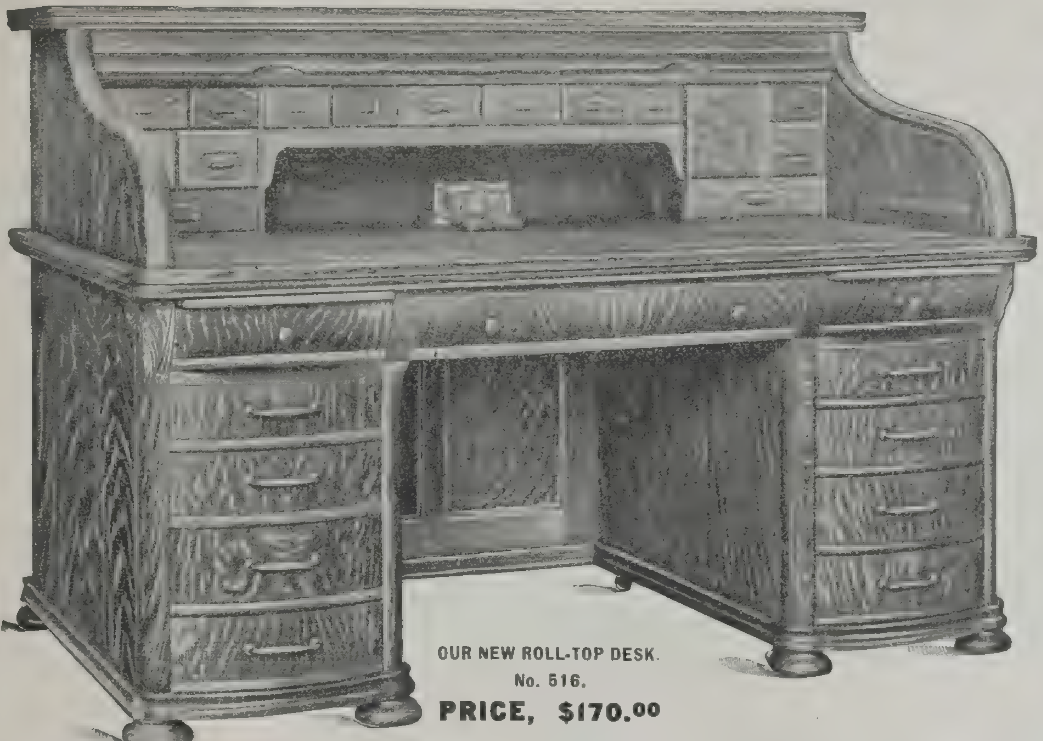
GRAND RAPIDS DESK COMPANY,

MUSKEGON, MICH., U. S. A.

Manufacturers of **HIGH-GRADE DESKS** **OFFICE HOME** **FOR EXPORT.**

ESTABLISHED 1880. **ESTABLISHED 1880.**

TRADE MARK GRAND RAPIDS DESK COMPANY GRDC



OUR NEW ROLL-TOP DESK.
No. 516.
PRICE, $170.00

☞ Send for **Net Export Prices,** which include boxing and delivery F. O. B. New York.

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed postpaid to all parts of the world.

NEW DESIGNS. SUPERIOR WORKMANSHIP. SUPERB APPEARANCE.

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

THE IMPERIAL BOOKCASE

THE IMPERIAL FURNITURE CO.

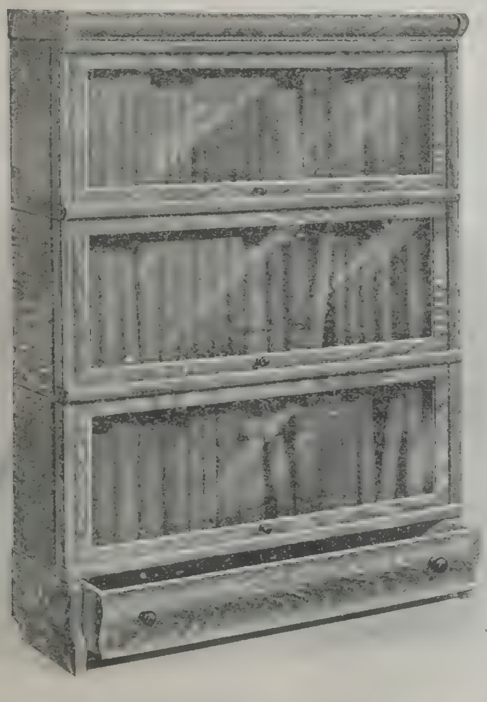
Imperial TABLES

CAPITAL STOCK, - - - $200,000.00

Manufacturers of

TABLES AND SECTIONAL BOOKCASES.

"The Finest Factory in America." Built Expressly for Export Trade.



THREE-SECTION BOOKCASE.

Set up with top and base, showing drawer. Each section measures (inside) 32 in. in width and 10¼ in. in height. Made of selected quarter-sawed oak, wax or handsome polished finished.

Special Offer for Introduction Abroad.

IMPERIAL BOOKCASES.

TWO Three-Section Bookcases, complete with top and drawer base, as shown in illustration, and

TWO Six-Section Bookcases, complete with top and plain base.

PRICE, f. o. b. New York, - $50.00

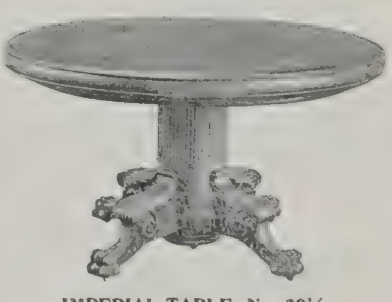
Each Three-Section Bookcase weighs net 80 pounds, gross 120 pounds, and measures 6 cubic feet.
Each Six-Section Bookcase weighs net 140 pounds, gross 200 pounds, and measures 10 cubic feet.

IMPERIAL TABLES.

TWO Imperial Tables, No. 39½ (as described), packed two in a box. K. D. flat.

PRICE, f. o. b. New York, - $52.00

Net weight 380 pounds, gross weight 600 pounds, and measures 77 cubic feet.



IMPERIAL TABLE, No. 39½.
DINING TABLE.

Round top, 52 inches. Made of fine selected quarter-sawed oak, hand-carved. Special offer, 8-foot length.

Our catalogues, illustrating and describing the many styles of BOOKCASES and TABLES manufactured by us, mailed postpaid to all parts of the world.

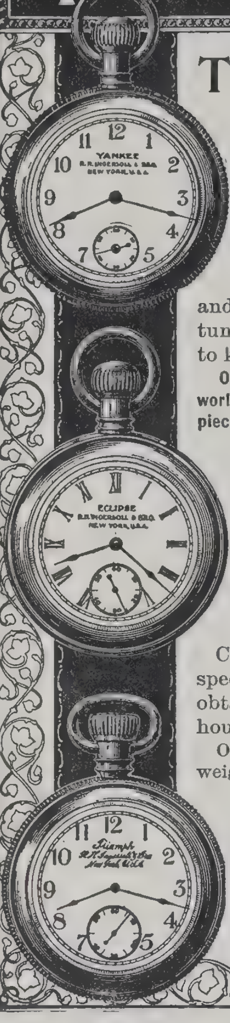
☞ Orders received direct or through export commission houses. To avoid mistakes, when ordering through the latter, please specify IMPERIAL and mail us a duplicate of order.

IMPERIAL FURNITURE CO.,

MANUFACTURERS,

GRAND RAPIDS, MICHIGAN, U. S. A.

THE INGERSOLL AMERICAN WATCHES


YANKEE
R.H. INGERSOLL & BRO.
NEW YORK, U.S.A.
ECLIPSE
R.H. INGERSOLL & BRO.
NEW YORK, U.S.A.
Triumph
R.H. Ingersoll & Bro.
New York, U.S.A.

THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of timepieces. The output is five thousand watches per day, which go to all parts of the world.

PRICES

Yankee, $7.80 doz.
Eclipse, $10.20 doz.
Triumph, $13.20 doz.

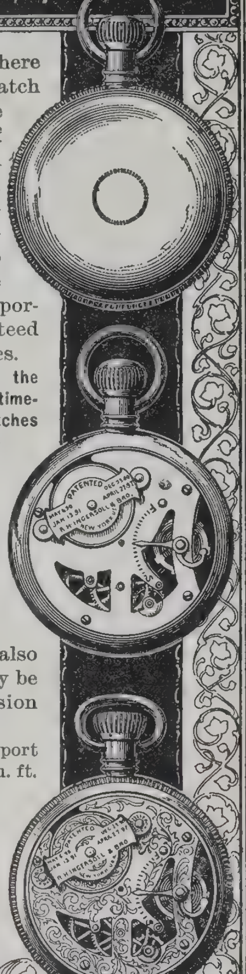
F. O. B. New York.

Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 1½ cu. ft.

Send all orders through your commission house and send us copy of same.

Robt. H. Ingersoll & Bro.,
Manufacturers,
67 Cortlandt St., New York City, U.S.A.



C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.

Regular 4-oz. Bottle.

Best dressing put up and warranted in all respects.

Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

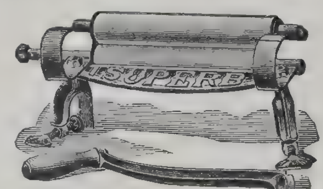
For polishing patent leather shoes quickly and without injury to the leather.

LOVELL MFG. CO.

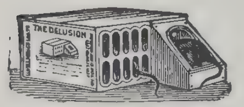
Erie, Pa., U. S. A.
Export Department: 54 Warren Street, New York.
Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.

Send for Catalogue and Prices.



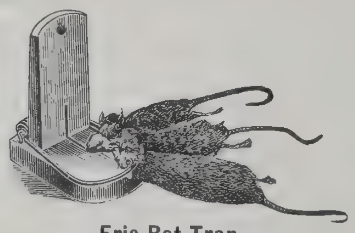
We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion Mouse Trap.

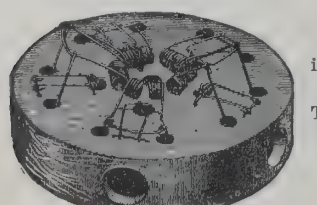
Requires no setting.

Rex Trap.
Made in two sizes: large size for rats; small size for mice.



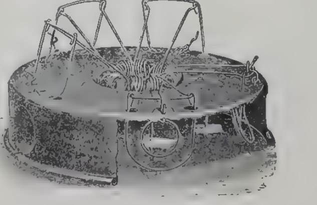
Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch."
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish.



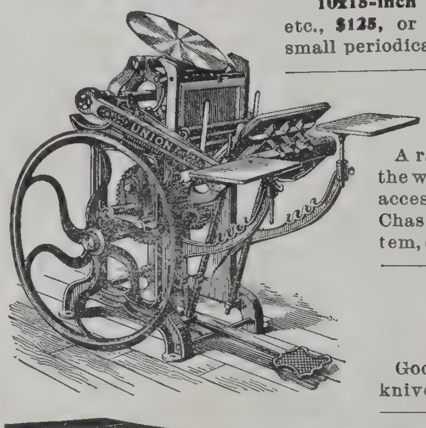
Lovell's Easy-Setting Metallic Mouse Trap

CHEAP PRINTING.

Hand presses, easy to use by man or boy. Typesetting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **$125**, or with more type, rules, etc., for small periodical, **$200.**

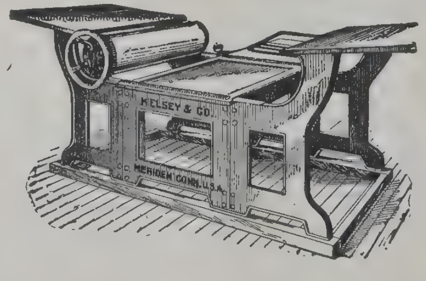


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **$12.00.**


KELSEY & CO.
MERIDEN CONN. U.S.A.

Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches, Price, **$500**. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

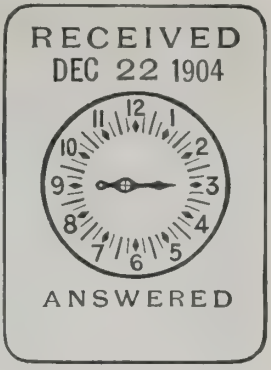
This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

Price, with dates and printing die, as illustrated, or with any other wording that may be desired, **$3.50.**

A. A. WEEKS, 11 Gold St., New York, U. S. A.

Manufacturer of Glass and Iron Inkstands and Office Stationery.

Send for Catalogue and Export Discounts.



GOODS WELL DISPLAYED IS HALF THE BATTLE WON!!!

GRAND RAPIDS FIXTURES CO., MANUFACTURERS OF K.-D. (KNOCK-DOWN) SHOW CASES FOR EXPORT.

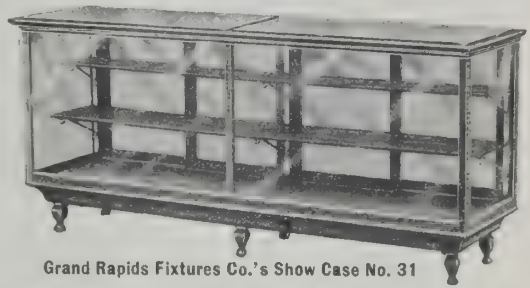
SHOW CASE No. 31 is **Our Leader for Foreign Markets,** and is just the thing for displaying **Furnishing Goods, Chemists' Sundries, Dry Goods;** in fact, is well adapted for the **display of any line of goods.**

SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel plated, adjustable shelf brackets.

SPECIAL EXPORT OFFER.

Upon receipt of $42.00 in U. S. Gold (or its equivalent), we will box, ready for transportation abroad, and deliver F. O. B. New York City, **one of our No. 31 Show Cases as shown.** Net weight, 248 pounds; gross weight, 384 pounds. K.-D. for export measures 28 cubic feet.

☞ Our Catalogue, illustrating and describing the various styles and sizes of **K.-D. Show Cases** manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



Grand Rapids Fixtures Co.'s Show Case No. 31

GRAND RAPIDS FIXTURES CO., GRAND RAPIDS, MICH., U. S. A.

BENTLEY & GERWIG FURNITURE CO.,

Manufacturers of the

BEST OFFICE DESKS AND WARDROBES IN THE WORLD FOR THE MONEY.

THAT'S ALL WE CLAIM.

Export our specialty. Our patented knock-down device makes it easy to set up our Desks in 10 minutes.

POSITIVELY GUARANTEED TO BE THE BEST DESKS IN THE WORLD.

Prices range from $10.50 to $40.00 on Roll-Top Desks and from $7.25 to $17.50 on Flat-Top Desks. Wardrobes from $5.75 to $19.00.

All prices are for goods packed for export. Write for catalogue.

BENTLEY & GERWIG FURNITURE CO.,

Cable Address, "Lonbent." **PARKERSBURG, W. VA., U. S. A.**

BORN & CO. Columbus, Ohio, U. S. A.

BREWERS and EXPORTERS of

BORN'S CELEBRATED XX PALE and MUENCHNER BEERS.

The Absolute Purity and Superior Flavor of Our Beers Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts Born's Muenchner, packed in barrel } **$10.00**
3 " " " XX Pale " " " } net cash, F. O. B., N. Y.
5 doz. pints Born's Muenchner, packed in barrel } **$10.00**
5 " " " XX Pale " " " } net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), **$9.00** per barrel, F. O. B., N. Y.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

The Improved United States Cream Separators

are the most practical machines for the complete separation of milk from cream by mechanical means. They combine simplicity and durability with large capacity. The strong construction of the U. S. reduces repairs to a minimum. The hand sizes have capacities of from 150 to 700 pounds of milk per hour, and may be operated, if desired, by any kind of power by attaching pulley.

The bowl, where the separation takes place, is the acme of simplicity, having only two parts inside. It will skim milk at a wide range of temperature, and holds the world's record for close skimming.

PRICES OF HAND SIZES FROM $50.00 TO $165.00.

Illustrated catalogues sent postpaid for the asking. Orders received through export commission houses. (In each case duplicate order should be mailed to us.)

THE VERMONT FARM MACHINE CO., Bellows Falls, Vt., U.S.A.

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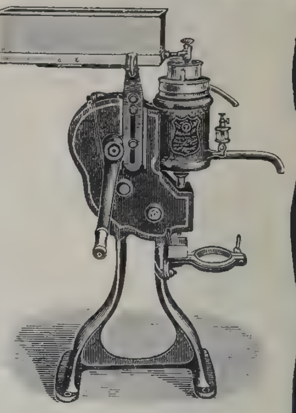

The 1905 U. S.

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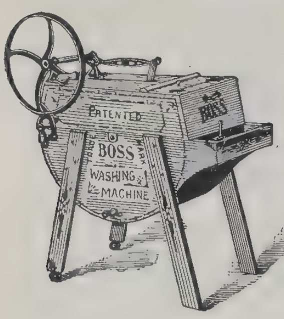

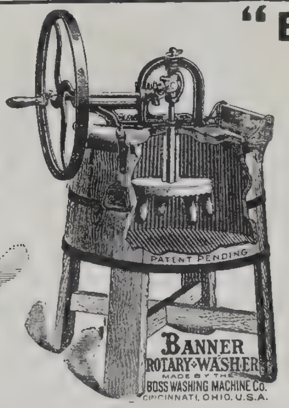
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NECESSITY WHEREVER CLEAN CLOTHES ARE DESIRED.

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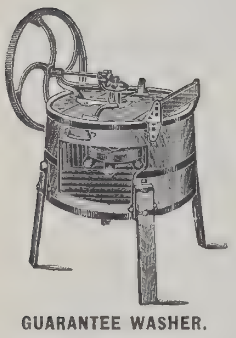

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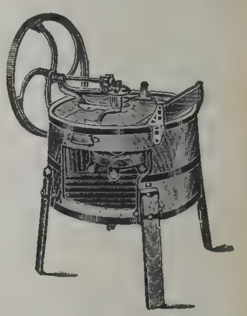

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Weight of the above four Washing Machines, 250 pounds.

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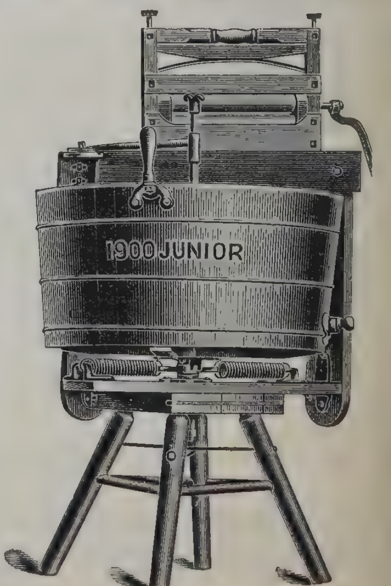

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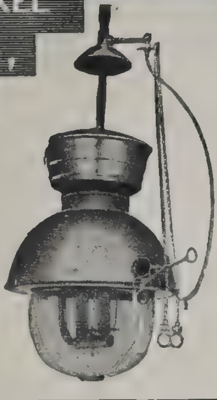

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THE MONROE IS A HIGH-GRADE REFRIGERATOR BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in **one solid piece of porcelain**. **The corners are rounded.** There are no joints or crevices for the food to decay in. **The porcelain is white, durable,** and as easily cleaned as a china dish. **The ideal house refrigerator, absolutely sanitary.** The prices here quoted **for foreign markets only** (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, Oak Exterior,	**$54.00**
Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.	
MONROE No. 30, Style E, Solid Porcelain Inside, Oak Exterior,	**$69.00**
Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.	

All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of **Solid Porcelain Refrigerators** made by us, mailed postpaid.

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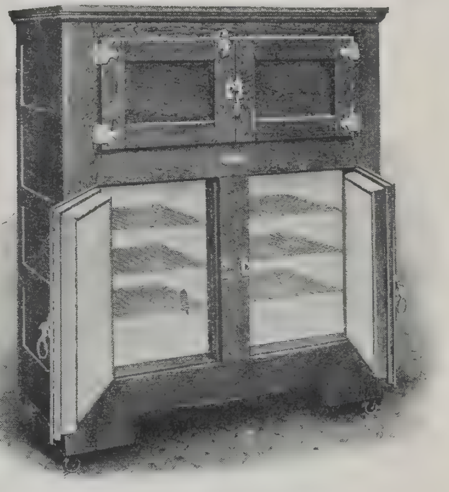

Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, **LOCKLAND, OHIO, U. S. A.**

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PAINTING AND WHITEWASHING MACHINE.

"DOES THE WORK OF TWENTY MEN."

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WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR.

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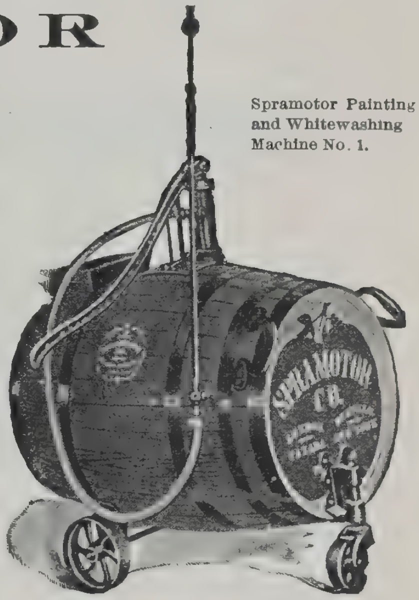

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THE SPRAMOTOR CO., Manufacturers, - London, Canada.

Cable Address: "Spramotor," London, Canada. Codes: Directory, A B C 4th, and Western Union

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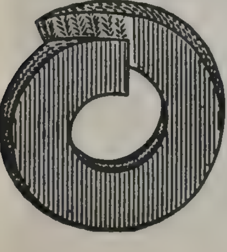

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Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

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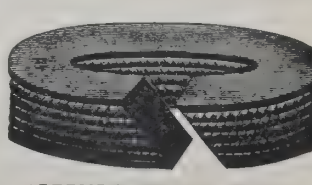

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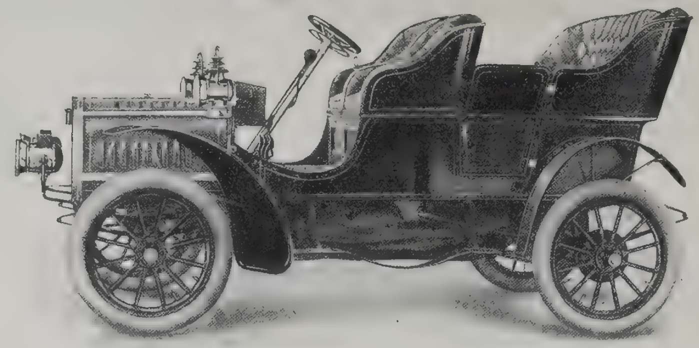

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THIS vehicle is meeting every requirement of beauty, speed and reliability. In California and other points on the Pacific Coast where it has been in constant use for nearly three months, customers are forcing dealers to wire requests for immediate delivery. The mails are too slow. There never was more enthusiastic and practical approval of a vehicle. Its upkeep has been shown to be remarkably low. Full information will be gladly furnished upon request.

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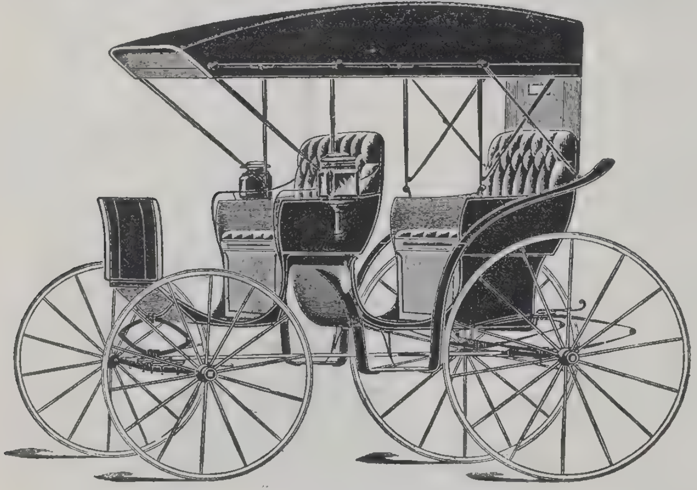

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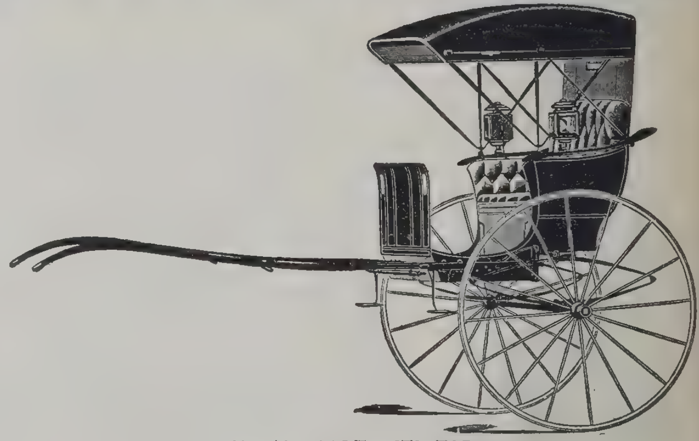

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Our general catalogue, fully describing complete line of vehicles and harness, mailed on application. Address

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The American Exporter

[Founded by Root & Tinker, 1877],

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by Howard Lockwood & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - - Publishers
Bennett Building, New York.

Published on the 1st of each month.
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Entered at the New York Post Office as Second-class Matter.

CHINA'S INTEGRITY AND NEUTRALITY.

THE United States Government has again stretched out her protecting arm to save China. It was done very quietly but in the nick of time, and before the world at large had become aware that a cause for action existed the desired end was attained. Being forewarned that certain Powers contemplated a readjustment of China's boundary lines at the conclusion of the war in the Far East, Secretary of State Hay dispatched a circular note to the non-belligerent Powers asking for renewed pledges that no attempt shall be made upon the integrity of Chinese territory. Responses, promptly made, gave assurance in every case that the "administrative entity" of the empire would be respected.

This is not the first case of American diplomatic foresight, but it is one of the most remarkable. The Secretary's note was dispatched directly after the fall of Port Arthur and before Russia made her protest to the Powers alleging certain neutrality violations on the part of China and threatening reprisals therefor. Thus was the obvious intention of the St. Petersburg Government circumvented and the threat baffled before its utterance. This renewal of pledges will secure the maintenance of neutrality which China appears helpless to maintain for herself. With the principal Powers pledged in opposition to any effort looking toward China's dismemberment the empire's safety is assured.

Realizing that China's integrity depends upon her observance of neutrality in the present conflict, the American Government, immediately upon receipt of Russia's complaint, sent China for a second time a friendly note of warning urging the great advantages, both to herself and to the remainder of the world, of a strict observance of neutral rules. In doing this the United States expressed no opinion as to the truth of Russia's claims. The last note, like the one first mentioned, was sent by Secretary Hay because of a desire to do everything possible to save China and other neutral Powers from the serious complications sure to follow an extension to Chinese territory of the zone of hostilities.

But for this prompt and quiet action of the American Secretary, whom an admirer recently addressed as "John Hay, Secretary of State for the Universe," we might have witnessed, at the close of the Russo-Japanese conflict a repetition of the events of 1877 when at the termination of the war between Turkey and Russia certain Powers proceeded to help themselves to a slice of Turkey under the flimsy pretext of preserving the "balance of the Orient." At that time the position of the American Government was one of indifference; now it is one of interested brotherhood and fair play, while its unique position gives it power to do what no Old-World Power could attempt without exciting suspicion and perhaps provoking a conflict.

The American Exporter rehearses and comments upon this bit of diplomatic history, made since the opening of the new year, for the purpose of giving its readers the correct viewpoint regarding the motives of the Government from which it emanated. The United States is not attempting to run the affairs of Asia in addressing the Powers with reference to China, or China with reference to her attitude toward the Powers. She is simply acting in the recognized interest of the whole world. In the coming years when China, now slowly awakening from her long sluggishness, shall arise to national greatness and shall take her place among the mighty powers of the earth, American diplomacy, generous yet just, which stood like a rock against the partition of the empire when enemies within paved the way for the encroachments of enemies from without, and which through the ensuing years of peril not once but many times insisted that the Powers should respect China's integrity, will have had its full fruition.

MISSIONARIES OF COMMERCE.

IN pursuance of its settled purpose to establish the closest relations between American producers and foreign consumers, the United States Government has under consideration a plan which, if adopted, will effect an important improvement in our commercial policy. This plan, which has been formulated by Hon. Francis B. Loomis, Assistant Secretary of State, proposes that American commerce shall have a place of higher dignity in the diplomatic service than it has hitherto enjoyed, and that its interests shall have special recognition in official agencies of international intercourse. To that end it is proposed to establish a corps of commercial experts whose duty it shall be to study trade conditions in other countries and ascertain the needs of foreign buyers in order that their demands may be more accurately supplied by American manufacturers. It is intended that these experts, chosen with special reference to their fitness, experience and business ability, shall be known as commercial attachés, and that they shall have equal dignity with military and naval attachés at American embassies and legations in foreign countries. The President of the United States believes that the investigation and reports of these experts would place the American producer and the foreign consumer in closer touch with each other, and that the result would be a more satisfactory transaction of their trade exchanges. "The magnitude of our export trade," says the President in his message commending this proposal to Congress, "is such as to suggest the grave importance of providing it with all the official apparatus necessary to its full and free development."

The plan thus outlined involves no curtailment or impairment of the American consular system. On the contrary, it would undoubtedly tend to increase the efficiency of the consular service, by stimulating its members to greater activity and usefulness. It would open an avenue of promotion for consuls who prove their efficiency, and thus offer extra inducements for diligence and energy in consular work. The United States consular service has unquestionably improved very much in the last few years but, as the President points out, this improvement has been brought about by the valuable labors of individual members rather than by the efforts of the service as a whole, and it is clear that further agencies of trade promotion must be provided if a continued increase of American exports is desired. The post of commercial attaché would be an intermediary one between the consular service and the diplomatic service, combining in some degree the functions of both, and affording a fair and logical means for the advancement of deserving members from the lower to the higher. Moreover, it would provide a more adequate representation for American business interests in other countries than they have at present, and thus present a further assurance to the world that the real mission of the United States is peace, not war. The United States Government maintains military and naval attachés at its embassies and legations in all the great capitals of the world. Why should it not also maintain commercial attachés whose aim it shall be to seek out new opportunities for promoting international concord and good will through the development of trade and industry?

Much has been done for the expansion of American exports by commissioners sent out representing special interests seeking new markets. This sort of missionary work has been highly successful in many cases, but because it was limited to individual interests or groups of them it could not be broadened into a general policy of trade exploitation. What is obviously required is an official policy for that purpose whose members shall represent American industries collectively, and whose duty it shall be to ascertain the needs, tastes and customs of foreign buyers. This information, carefully gathered and transmitted to the United States Government and then issued in frequent reports to American manufacturers, would enable the latter to meet the requirements of foreign markets with increasing accuracy, promptness and satisfaction. It is to provide such an official policy of trade development that the plan advocated by President Roosevelt is specially designed. We do not doubt that its adoption would give a new and powerful impetus to American commercial progress.

THE FALL OF PORT ARTHUR.

WHILE the surrender of Port Arthur to the Japanese might appear to be only a great event in the gigantic war drama now in progress in the Far East, it is in reality one of vital importance to the commerce of neutral nations in the Orient. In so far as it involved the navies of Russia and Japan, the siege of Port Arthur presented conditions that were exceedingly embarrassing and costly to inoffensive traffic in Asiatic waters. The situation was extraordinary. It brought virtually the entire navy of Japan and the most powerful fleet of the Russian navy into contact at a point commanding the routes of an enormous trade between Asia and the nations of the West. The result was that for ten months there was constant peril to neutral ships in those waters, American ships, British ships, German ships and Swedish ships were seized by one belligerent or the other, charged with bearing contraband of war, and while the charge was proved in some cases, it was disproved in others. The effect of those seizures was to arouse a sense of insecurity so great that ship-owners declined to receive cargoes for the Far East except at rates that were almost prohibitive to legitimate business. Trade between China and other peaceful nations was in great degree paralyzed by the peril with which the naval situation at Port Arthur threatened neutral commerce. But with the fall of Port Arthur the situation is radically changed. The destruction of the Russian fleet transfers the naval center of the war to other—possibly to European—waters, and insures a larger measure of safety to commerce between China and the Occidental countries.

It is not our purpose to discuss the merits of the present war. The questions immediately involved do not concern the interests of peace and commerce which THE AMERICAN EXPORTER represents. But in a broader sense the war in the Far East is a matter of serious importance to the trade affairs of the whole world. It has already subjected the commerce of neutral nations to disorder and depression, and so long as it shall continue its effect must be to interfere with the inoffensive industries of mankind. Moreover, and with no intention of passing judgment upon either belligerent, we may point out that the domination of Russia in North China cast a deadly blight upon the world's commerce with the Chinese Empire. Markets which had afforded an outlet for vast supplies of American and European products were arbitrarily closed. Exports of American cotton cloths to China, for example, declined from 82,000,000 yards for the months of July, August and September, 1903, to 17,000,000 yards for the corresponding period of 1904. But with the occupation of the treaty port of Newchwang by Japan, a new order of things began at once. Trade restrictions were removed as far as the exigencies of war permitted, neutral ships were freed from the annoyances to which they had been subjected, and the products of Europe and America again began to flow into the ready markets of China. In a commercial sense, the nullification of Russian domination in North China has been a blessing to the world. It has removed a dangerous obstruction from the course of Oriental commerce and corrected a situation which has more than once threatened to drag other nations into the present war.

Inasmuch as the Japanese occupation of Newchwang was immediately followed by a reopening of the Chinese markets for foreign manufactures, it is reasonably certain that the Japanese occupation of Port Arthur will also contribute to commercial freedom and security in the Orient. Japan is a manufacturing nation. Her national existence depends upon safe access to outside markets for the products of her industries. She realizes, therefore, that any needless interference with ocean-going commerce would be extremely perilous to her own interests in that it might provoke neutral nations to exclude her from their markets. It is only fair to say that her policy since the war began has been moderate, just and so ordered as to interfere as little as possible with the movement of neutral trade. Her own commerce has flourished in spite of the war, her industries are prosperous, and her condition pledges her to a policy of scrupulous non-interference in the traffic of nations with which she is at peace.

The future of Port Arthur is a matter of large importance to the commercial world. We do not believe that either Japan or Russia will be permitted to retain the place simply as a great military stronghold. There is a higher and nobler use for it. It should be rebuilt, not as a mighty fortress, bristling with guns, but as a great commercial rendezvous to serve as a peaceful clearing house for the splendid traffic between the Occident and the Orient. Thus rehabilitated, and governed as a joint possession of the maritime powers, open on equal terms to all nations, Port Arthur would become a visible pledge of international peace, and of honorable competition in the unfolding commerce of Asia. Japan has twice conquered the massive fortress at Port Arthur, and each victory has added enduring luster to the valor of her sons. But the greatest triumph awaits her still, and to gain it she has only to present Port Arthur to a joint convention of the maritime powers as a pledge of concord and good will, to be governed as an open port for the ships of all countries and an emporium for the commerce of the world.

RECIPROCITY SENTIMENT.

ONE of the most promising signs of the times as far as foreign trade is concerned, is the growth of the sentiment for reciprocity treaties and agreements in the United States. Even the advocates of the protection policy have yielded to the demands of merchants and manufacturers for freer trade relations, and there is no doubt that the United States is now entering on an era of reciprocity.

Partial reciprocity treaties have existed for some time between the United States and several of the European countries. None has so far been negotiated with Great Britain, but this was due to a great extent to the belief widely held on both sides of the water that none was necessary, as under the treaty of peace concluded at the end of the war of 1812, Great Britain was entitled to all the trade preferences given to "the most favored nation" by the United States. This "most favored nation" clause in the treaty has been the subject of litigation in the United States ever since the reciprocity movement began, and only recently the United States Supreme Court decided that it did not apply to tariff rates under the reciprocity treaties and agreements. The same condition has had more or less force in delaying and hampering the movement for a reciprocity treaty with Canada.

The growth of the sentiment for freer trade relations with Canada is evidenced by the election last November in the State of Massachusetts. This, in addition to being one of the greatest manufacturing States in America, is one of the States near the Canadian border and its trade relations with Canada are very close. At the general election above referred to, Massachusetts polled an overwhelming vote for the Republican party, which stands for the principle of protection, and at the same time it elected a Governor from the Democratic party, a great manufacturer and exporter, who went before the people on a platform declaring for reciprocity with Canada and freer trade relations with the world in general.

THE increased export trade of the United States with China for the past year is very encouraging. Official figures show aggregate exports for the past ten months of $20,557,184. This is the largest amount ever recorded.

CIVILIZATION IS WASTEFUL.

IN the announcement that one of the great American railroad companies—the Pennsylvania—will plant 800,000 young locust trees this year with a view of providing its future supply of cross ties, there is a sharp reminder of the gross wastefulness of modern civilization. The Pennsylvania Company instituted the policy of tree-planting in 1903 and up to this time has planted altogether about 210,000 young locusts, but its use of cross ties is so extensive that it will have to continue planting by the million to insure an adequate supply for future needs. Several other great railway companies have also engaged in tree-planting, but as it takes thirty years to make a good cross tie from a locust seedling, it will be seen that the plan to provide for the future has been taken up rather late. The railroads of the United States use 110,000,000 ties every year, and many companies have so completely exhausted the timber supply along their lines that they are required to haul their ties from points 800 to 1,000 miles distant. This is not only exceedingly expensive but it frequently results in serious interference in regular traffic besides imposing a great deal of wear and tear on rolling stock.

This destruction of timber resources by the railroads is merely an example of the wastefulness of present-day civilization. A similar tendency is manifest in many other departments of modern enterprise. For years more than 1,000,000,000 cubic feet of gas, commercially useful, was allowed to go to waste every twenty-four hours in the conversion of coal into coke in a single district in the State of Pennsylvania. That gas, properly treated and stored, would have been enough to light and heat a city of millions. The once valuable seal fisheries of Bering Sea have been almost totally destroyed by the reckless killing of the seal herds by greedy and lawless hunters. By their failure to agree upon a plan to protect the seals the United States and Great Britain have tolerated a wanton policy of destruction which has well-nigh annihilated what not many years ago was one of the richest sources of fur in the world. Even more discreditable was the destruction of the vast herds of buffalo which once ranged the Western plains of the United States. Those animals, which were enormously valuable both as food and for their hides, were slain by tens of thousands for their pelts alone, and their carcasses were left where they fell, to feed the vultures and wolves. The reckless greed of man has thus almost totally exterminated an entire species of animal which, properly protected, would have been a source of enormous wealth. In mining coal there is a heavy waste of material. The destruction of property by fire causes a yearly loss of scores of millions of dollars. The manufacture of paper from wood pulp involves a ruinous waste of timber. And so on through many other important industries, there is a constant waste of resources which amounts to a robbery of nature.

One of the problems of modern civilization is to devise ways and means to repair the wastage resulting from industrial enterprise. Posterity has a claim upon the world's resources of timber, fuel and petroleum. That claim requires that those resources shall be protected as fully as possible against needless waste. Denuded timber lands should be replanted, mineral deposits should be guarded against wasteful depletion and all sources of natural wealth should be treated as the property, not merely of the present generation, but of posterity. If civilization tends to increase men's wants, as Matthew Arnold declared, it also tends to increase men's wastefulness. The economic problem of our times is to provide for all the wants of human society with no squandering of the commonwealth of natural resources.

AMERICAN INGENUITY ILLUSTRATED.

ONE of the best evidences of how American ingenuity faces and overcomes untoward natural conditions is given by the course of the prices of rubber shoes this year. Although the price of raw rubber is nearly 35 per cent. higher than it was a year ago, the great rubber footwear concerns of the United States have announced a reduction of from 5 to 10 per cent. from last year's prices for their manufactures. Better methods and greater economy in production, of course, supply the explanation.

THE PANAMA CANAL.

IT is now nearly one year since the United States Senate decided the long-mooted question of the construction of a trans-isthmian canal. Since then the surveys have been completed and the greater hindrances to its completion, the prevalence of malaria and yellow fever, have been overcome, so that we may expect uninterrupted progress on this greatest of modern engineering feats. The actual work of digging the canal has been begun, several thousand men being now actively engaged, and the necessary preliminary work may be said to have been finished, so that there should be no delay in pushing the work to completion as fast as ample means, engineering skill and the employment of the most modern appliances can accomplish.

It is estimated that eight years will be required to complete this great undertaking, and that $150,000,000 in gold will be spent on the canal proper. To this must be added the $40,000,000 paid the stockholders of the French company and the $10,000,000 paid the State of Panama for the strip of land, which will bring the total cost to the United States to $200,000,000. In return for this it is expected that the trade of this country with the Far East will be quadrupled, while it will have been the agent through which the whole commercial world will derive benefits of incalculable value.

During the period of construction vast quantities of material, machinery and tools will be required, all of which will doubtless be supplied by the manufacturers and producers of the Northern and Eastern States, while a large proportion of subsistence supplies and lumber can, and probably will be, supplied by the South and West, so that all sections of the country will share in the benefits. When we consider the immensity of the undertaking and the vast sums which will be required to be disbursed for all manner of supplies, the benefits to be derived by the manufacturing and productive interests of this country will be of no mean order and these have begun and will continue until the canal is finished, while the benefits to the commercial world will have to await its completion.

There is considerable difference of opinion as to the extent each section of the country will be benefited by the opening of this waterway from the Atlantic to the Pacific Ocean, but there can be no question that the whole country will profit thereby, not alone on the principle that what benefits one section is to the advantage of the whole.

It is believed that at first the greater benefit in the operation of the canal will be derived by Northern seaboard cities, they being the natural outlet for our manufactured products, and also largely for our natural products, while our shipping interests are there centered. But the course of commerce will undergo a change and the Southern seaports will eventually control the trade via the isthmian canal. This will give an impetus to manufacturing enterprises in the South and will tend to change many conditions now thought to be firmly established.

The benefits to our neighbors in South America, and especially on the Pacific Coast, cannot be computed, but they will be of immeasurable extent, especially to Peru and Chili, while the effect of the closer relations with the Latin races will have a benign influence. The advantages to be derived by Japan and China can only prove secondary to those to our South American neighbors. In fact, all the peoples of the world will share in the benefits which this grand undertaking by the United States Government will make available, and which it has pledged to dedicate to the use of all.

IMPORTANT ANTI-TRUST DECISION.

IN the closing days of January the United States Supreme Court rendered a decision of far-reaching importance. The court sustained the injunction issued recently by a Chicago judge against the Beef Trust, so called, a combination of the leading meat packers of America. The government contention, so ably presented to the court by Attorney-General Moody, that the Beef Trust is plainly an illegal combination in restraint of trade, is thus upheld. The decision gives general satisfaction. The American people have for a long time felt that the price of meat, and indeed of some other articles of diet, has been unjustly and needlessly high, and the conviction has been that the Beef Trust was responsible for this increased cost of living. Naturally, therefore, they hail with delight this decision of the highest tribunal in the land in their favor.

THE AMERICAN PUBLIC SCHOOL.

THE American public-school system is the outgrowth of and exemplifies the national belief in the universal education of all the people. It is a potent and unique agency of civilization. The individual schools are indices of the characteristics of the community in which each is located and reflects the desire of same as to the quality and extent of the education desired, but the standard is ever being raised, evidencing the progress made by each succeeding generation, and this is the natural result of the unique system, controlled by the people and governed in accordance with their desires. The coloring given to individual schools by purely local characteristics is at times regarded as detrimental, but changes are constantly taking place and the cosmopolitan character of the population of the United States tends ever to bring about uniformity of sentiment, characteristics and ambitions, the more notable of the latter being to give the sons and daughters better educational facilities than those enjoyed by the parents. In the development of the individual schools, be they urban or located in the sparsely settled sections, they have become the principal forces for expanding the social and industrial usefulness of every individual. Acknowledging the truth of this the people believe in the necessity of general education as one of the principal factors in the building up of a successful and prosperous State, and give substantial evidences of this belief in their willingness to contribute without stint to the building and equipment of the public school.

THE VALUE OF INTERNATIONAL EXPOSITIONS.

NOW that the World's Fair at St. Louis is over, the old discussion as to the real value of such great international expositions is coming to the front again. Is the game worth the candle?

Does the country in which the exposition is held, and the Government which must aid it, receive a return at all commensurate to the money expended?

Those critics who measure benefits by the strict rules of bookkeeping, are already declaring that the St. Louis Fair has been a failure. Has it brought trade to this country, to pay us for the money we have spent? they ask. Have the visitors from foreign countries left money enough here to reimburse us? We know what the debit side of the ledger is. Show us the credit side.

Criticism from this point of view is very narrow indeed. It is impossible to measure the benefits of such an undertaking by the immediate income in dollars and cents. The benefits of the St. Louis Fair will be felt for a generation, in improved American trade. Foreign buyers who visited the Fair and became familiar with the superior qualities of American goods, may not buy to-day or to-morrow. They may be stocked up with goods purchased in other countries, or they may be tied to other countries by bonds of friendship or credit, but if we have convinced them while they were at the Fair that our goods were superior they will come to us in the end.

It may be proper here to draw attention to the fact that many of the critics who complain that fairs do not pay, belong to the class that expects the fair to do its selling for it. Many merchants seem to think that there is something in export trade that makes it different from home trade, that once they have got a foreign buyer to look at their goods nothing else is necessary. If any one would suggest to a merchant of this class that his home trade did not need constant drumming by efficient and energetic salesmen he would look on the man who made such a suggestion with pity, thinking him a fit subject for a lunatic asylum. Yet this is just what he is saying himself when he declares that fairs do not pay. If they don't pay him, it is because he has expected the Fair to do all the work of selling his goods, instead of applying the same principles of business to his export that he applies to his home trade. The progressive merchants of all countries are agreed that fairs do pay, and that the money spent on them by the government is returned to the merchants of the country a hundred fold.

In this connection some figures showing the magnitude of the great international expositions since 1851, are interesting. The figures are faulty, as they include the total admissions, including employees and exhibitors as well as real visitors, but they are the best available:

Place.	Year.	Days Open.	Total. Attendance.
London	1851	144	6,039,195
Paris	1855	200	5,162,330
London	1862	171	6,211,103
Paris	1867	217	6,805,969
Vienna	1873	186	6,740,500
Philadelphia	1876	159	9,789,392
Paris	1878	194	16,032,725
Paris	1889	...	25,398,609
Chicago	1893	183	27,539,521
San Francisco	1894	185	1,315,022
Atlanta	1895	183	779,560
Nashville	1897	183	1,779,074
Omaha	1898	153	2,613,508
Philadelphia	1899	69	1,330,646
Paris	1900	...	48,240,765
Buffalo	1901	184	8,120,048
Charleston	1902	181	577,752
St. Louis	1904	185	19,694,855

The next international fair will be the Lewis and Clark Centennial Exposition to be held in Portland, Oregon, U. S. A., this year. While it is not expected to rank with the great world's fairs in point of magnitude it will no doubt be a credit to American enterprise.

INTERNATIONAL ARBITRATION.

THE United States Government is taking a new and advanced ground in international affairs. The treaties of arbitration which have recently been negotiated with many Powers and now await ratification by the Senate at Washington are unique because of two features. First, they are uniform and exactly identical in every particular and second, they must be ratified without change and simultaneously. If one of the treaties fail of ratification the President has indicated that all are likely to be withdrawn. The reason for this may not appear at first thought on the subject. These treaties have to do with the settlement of international disputes and the maintenance of comity and peace and are in an entirely different class from the ordinary convention for commercial purposes. It is obvious that a system of arbitration suitable between the United States and Germany, for instance, would be equally suitable between any other two Powers, and therefore uniformity of action dignifies and exalts what would otherwise be an ordinary agreement.

If America were to propose an arbitration treaty with just one of the Powers there might arise a suspicion on the part of other governments as to the purity of motive. Under the plan of identical conventions there can be no question as to the motives which actuate the American Government in proposing to settle peacefully all international disputes. The United States is making no distinction in this important matter, but proposes "equal treatment and honest friendship with all." These treaties, which are almost certain to receive the United States Senate's stamp of approval, have been negotiated with Great Britain, Portugal, France, Italy, Germany, Switzerland and Spain. They mark a new era in the history of international affairs.

Patent-Office a Source of Greatness.

SEVERAL years ago, according to a writer in the New York *Herald*, Japan instituted an official search "for the secret of a powerful nationality," and conceded that secret to the liberality of the United States Patent-Office. The *Herald* writer explains: "A special commissioner in the person of Korekiyo Takahashi was sent from Tokio to Washington to make an official study of American conditions and report upon them. Mr. Takahashi called upon Dr. P. B. Pierce, at that time the examiner of designs in the United States Patent-Office, and in the course of a conversation the doctor asked why it was that Japan was so anxious to establish a patent-office. 'For this reason,' said the commissioner. 'We have been asking in Japan, "What has made the United States such a great nation in such a short time?" We have investigated, and we have found that it was patents, and we will have patents.' Senator Platt, speaking in 1884 on a bill for the reorganization of the Patent-Office, declared that the establishment of the Patent-Office in 1836 'marked the most important epoch in the history of our development—I think the most important event in the history of our Government from the Constitution to the Civil War.'"

Niagara Falls Harnessed.

THE grandeur and natural beauty of Niagara Falls have been fruitful themes for the descriptive writers, the tourists, and, in fact, to all who have visited that wonderful display of natural forces. But it has been left for this practical and prosaic age to regard this vast natural power as a means of profit and to gauge its value as the servant of man. That the great force of falling water has been harnessed is probably known to all our readers, but to what extent the power has been utilized and in what manner is not generally known, and this will prove of interest to all who have seen the falls or have read of their extent and grandeur.

A recent writer visiting Niagara made a tour of inspection of the power plants and some of the industries there located, and has given us a fair idea of their extent and importance. Think of it—a million horse-power. The mind can scarcely grasp the immensity of the motive power thus brought into use which for centuries has been allowed to go to waste. But it has been awaiting the development of electrical energy. By the use of the turbine or other water-power wheels but a very small part of this immense power could have been utilized. For many years a paper mill received its power from the water of the rapids just above the falls, but that was before the transmission of power by electricity. Now the force of the mighty fall of water is used to generate electricity, and this is conducted to distant points for utilization in industrial establishments, the motive power for street railways, for lighting and other purposes.

There are now at the falls in successful operation five different hydro-electric plants, providing a total output of nearly 150,000 electrical horse-power. By electrical horse-power is meant the actual amount of electricity generated by the dynamos, since the water turbine does not transform 100 per cent. of the stored-up energy in the water into mechanical motion, but in practice it delivers from 75 to 85 per cent., the difference lost being due to friction and structural defects of the mechanism employed. On the American bank of the Upper Niagara River are located three of the largest plants and on the Canadian side are two small plants, as compared with those on the American side, since they develop only 11,600 horse-power, while the latter develop 150,000 horse-power.

In the year 1900 the International Niagara Commission was established, composed of eminent engineers, who were to pass upon the feasibility of the project, and when this was done a prize of $22,000 was offered for the best plan to be submitted. Thomas Evershed evolved the broad generalization which constitutes the present successful methods by which the power is economically utilized on the large scale.

Prior to this time any attempt to transmit large volumes of the electric current must have proved futile, for alternating current generators—the only kind that are capable of projecting the subtle energy to great distances with the smallest possible losses—were practically unknown. By using direct current dynamos the falls might have been tapped ten years before, but at that period there was little demand for electricity served at that immediate point of operation, since the electric street railway was just being introduced, and the electro-chemical industries, such as the making of aluminum, calcium carbide, etc., were in their infancy.

The location of this plant is about a mile above the American Falls. A surface canal, 250 feet wide by 12 feet deep and 1,700 feet long, extends laterally from the river, and paralleling this is the wheel pit, as the location where the water turbines are placed is called, 425 feet long, 18 feet wide and 178 feet deep. Extending from the base of the wheel pit a tunnel was dug that measured nearly 19 feet wide, 21 feet high and 6,837 feet long, through which the water used flowed into the river below the falls. This civil engineering work completed, the hydraulic engineers took the next turn and began by installing ten turbines of 5,000 horse-power each—the same size and number as the steam units used for operating the subway—in the pit, the water being carried in them by steel penstocks, or conduits, 7½ feet in diameter and 136 feet in length, the great tunnel serving as a tail-race. Here the electrical engineers collaborated with the hydraulic engineers. The work was finished by connecting the electric generators above, and the great innovation of supplying every industry with all the cheap light, heat and power that was needed and transmitting to the city of Buffalo energy for the operation of everything, from a 16-candle-power lamp to a street railway system, was inaugurated. These original installations fulfilled the strenuous conditions imposed upon them so well that a year or two later the number of turbines and generators was more than doubled, and these have been in active service ever since.

At present the Canadian companies are in the ascendancy, one company installing a 180-000-horse-power plant, and the other is completing the details for a 110,000-horse-power equipment. These are located about a mile above the Horseshoe Falls. The tail-races of these will empty into the river at a point immediately below the falls. A smaller plant, having a capacity of only 6,000 horse-power, is also being constructed near those just mentioned. On the American side of the falls the excavations for a plant have been begun that will develop 80,000 horse-power more, while the aggregate horse-power of the plants now in the course of construction makes a total of 553,500 horse-power, and this, added to the 146,500 horse-power already in operation, brings the grand total up to 700,100 horse-power. Arrangements have been provided by which these stations may add to their equipment, and with the other work in actual progress no less than a million electrical horse-power will be at the disposal of consumers. One of the most interesting hydro-electric stations, in virtue of the fact that it will take its water from below the falls, instead of above them, as the other companies do, is one contemplated. The plan is to excavate a tunnel which shall start from the head of the Whirlpool Rapids, leading to a point 8,000 feet down the river, known as Devil's Hole. The volume of water that will be carried will produce 200,000 horse-power.

The greatest undertaking, however, is the canal now being excavated from La Salle on the Upper Niagara River, to Devil's Hole, which will have a length of over 37,000 feet, most of which will have to be cut through solid rock. This canal will be of such proportions that the water supply will operate thirty-two electric generators of 10,000 horse-power each, and these will be connected directly to the turbine wheels on a horizontal shaft.

Buffalo thus far has been the one city benefited by the development of electric power at Niagara. It is only twenty miles away, and the losses due to transmission are practically nil. The street railway and all other places where light and power are used for any purpose are buyers of the Niagara product. A single company in Buffalo controls the entire supply. There are over seventy-five consumers in Buffalo, the smallest concern using only 2 horse-power, the largest over 2,000 horse-power, for the operation of their motors alone; these same firms use an aggregate number of 18,000 16-candle-power lamps. Of these companies thirty-six have abandoned steam power, while twenty-four new factories have been started in Buffalo, and thirteen works have moved into Buffalo to enable them to utilize this power. It will probably not be long before the power from Niagara will be utilized by the New York Central Railroad when it installs electromotives on that division of its system.

An investigation by competent electrical engineers of the maximum distance to which power can be economically transmitted resulted in the conclusion that under the most favorable conditions about 550 miles is the limit.

Outlook for the Iron Trade in 1905.

"RARELY has the iron trade of this country passed the winter with such pronounced activity in all departments as in the case of the current season," says the *Iron Age*. "When the awakening demand first made itself felt in pig iron in September wise heads were shaking ominously, as it was considered quite out of the question that any great volume of business should develop in the autumn. As time wore on, and the activity seemed to confine itself to pig iron, the comparatively light trade in finished products became a matter of critical comment, and those who had misgivings about the strength of an autumn demand began to feel sure of their position. It is safe to say that everybody in the iron trade was taken by surprise when the buying movement was perceived to be spreading to finished products. So rapidly did the change occur that manufacturers were largely unprepared for it. Prices which had been with difficulty barely sustained by trade agreements were suddenly forced above the official schedules by the pressure for more rapid deliveries from eager buyers. As usual, advances in price stimulated trade instead of repelling it, and the close of the year found blast furnaces, rolling mills and steel works which had long been idle either actively at work or making vigorous preparations to resume operations. As an index to the condition of trade in finished steel products, the status of unfilled orders on hand by the principal steel corporation may be cited. It has the equivalent of more than six months of its maximum output now under contract, with the rail trade heard from to but a limited extent. It may be assumed that the outside interests have fared equally well. Thus, for at least half of 1905 steady running seems assured for the finished end of the iron trade. As to pig iron, the present rate of consumption leads to the belief that, unless prevented by inability to secure a sufficient supply of coke and ore, the production for the first six months of this year will exceed considerably the output in any previous half year.

"This promising outlook has been gained with what may be considered as only the beginning of the demand for iron and steel from the railroads. They have been fairly liberal buyers of steel cars and locomotives within the past three months, but their orders will have to be very much larger to come up to the average of the five years 1899-1903, which should now represent approximately their normal requirements. Their purchases of rails and bridges for delivery this year has been quite light thus far. It is known that they expect to purchase quite heavily of these necessities for permanent way, as they stinted themselves in both 1903 and 1904. This year they will be more able to indulge in expenditures for renewals and improvements, as earnings for several months have shown a gratifying increase over the corresponding period of the previous year. Those who deem it desirable or find it necessary to raise funds through the issue of securities can do so with greater facility than for years, as money was never more abundant than now, and only in times of great depression have interest rates been so low."

New Ore-Handling Process.

AN electrical apparatus has recently been put in operation in an American lake port on the Great Lakes. It is known as a direct electric unloader in connection with an electric bridge tramway. Only one man is required to tend it, and he rides in a trolley carriage to control the rotating, opening and closing the bucket, which holds eight tons. On a recent occasion a steamer with 9,306 gross tons of sticky ore in her hold was unloaded by four of the machines in fifteen and one-half hours, and the only shovelers employed were those who cleaned up the small portions of ore left in out-of-the-way parts of the boat. The bridge tramway in this plant handles, on the average, 296 tons of ore per hour, which is one man's work, as facilitated by American skill and ingenuity.

Automobiles and Automobile Exhibitions.

DURING the first three months of the present year there will have been held automobile exhibitions in the cities of New York, Philadelphia, Detroit, Cleveland, Buffalo, Boston and Washington in the United States, and at Toronto, Canada. The last year was one of extraordinary progress in the automobile field in the United States, but the present year shows even greater activity. In New York City two exhibitions were held simultaneously during the month of January, the one showing American automobiles having upward of 250 exhibitors, and that of the foreign manufacturers having 80 exhibitors and showing 25 different makes. A feature that causes comment was that the prices of cars at the importers' salon practically began where those at the American show left off. Those at the former ranged from $5,000 up, and those at the latter exhibition were from $350 to $5,000. Quite a number of new manufacturers of motor vehicles were on the list of American exhibitors this year and several of them offered cars of the typical American pattern with a horizontal engine, which was first known in the early days of the horseless carriage. The steam car has not entirely disappeared, but that of 1905 is an entirely different machine from those which were popular three or four years ago. Nor is the popularity of the gasoline engine entirely overshadowing the electric machine. In fact, the electric motor is to be found on more different styles of cars than ever before. A notable advance in all the gasoline cars is the perfection to which the muffling of sound has been brought. The best cars of the 1905 patterns are practically noiseless. From the graceful, light runabout to the ponderous touring car there has been an improvement such as one year ago would have been thought impossible. Makers now offer a finished machine that rides easy and fast and can be operated by almost any one. Best of all, automobiles have reached a point where they cost only an average figure for maintenance.

New features, new styles, improvements in almost every feature, and new accessories shown at the exhibitions have been so numerous as to be almost bewildering, and consequently only a few are selected as illustrative of the great advance attained. The Lozier Motor Company, of New York, which has hitherto devoted its plant to the manufacture of power boats, now makes power cars also, and exhibited a 4-cylinder, 30 to 35 horse-power side-entrance touring car, which elicited much favorable comment. Thomas B. Jeffery & Co., Kenosha, Wis., exhibited two styles of surrey and a limousine, in which the side-entrance type of body is used, individual front seats, high-backed rear seat, all luxuriously upholstered, insuring a high degree of comfort. The full tank has a capacity sufficient for 100 miles, so that the requirements of a touring car are provided. The White Sewing Machine Company, Cleveland, O., whose exhibit of steam cars attracted much attention, showed various types of cars adapted to recreation and industrial purposes.

The Olds Motor Works, of Detroit, Mich., beside the little handy car which first made the reputation of this house, had on exhibition a new touring car of 20 horse-power, with side entrance and with a wheel base of but 90 inches, also a number of heavy and light delivery wagons. A new and interesting feature of the exhibit of the Brennan Manufacturing Company, of Syracuse, N. Y., was a four-cylinder vertical motor; also an angle steel frame fitted with an opposed horizontal motor and sliding gear transmission.

One manufacturer has spent much time and money in an attempt to perfect a three-wheeled automobile. Many types of this vehicle have been brought out, and although it has been shown to be economical and convenient for some purposes, it has not met with the success that was hoped for it. But there are many things in its favor, including cost of construction, cost of operation, ease of manipulation and its adaptability to rough roads. Nevertheless, it has not recently made much impression on buyers in the United States.

Another manufacturer has placed on the market an opera 'bus, which has a great number of conveniences and luxuries. There is a system of heating the interior of the enclosed tonneau, electric illumination, speaking-tube connection with the driver, a folding writing-table and receptacles for opera glasses, toilet articles and engagement books or papers.

A motor combining the novel features of work and pleasure has been recently built. It is at once a truck for hauling moderately heavy loads and a coach with a capacity for seating fourteen persons. The seats can be attached or detached in a very few minutes and thus the transformation of the vehicle is made.

One of the real novelties is a gasoline lawn-mower, which is shown for the first time. A steam lawn-mower was in evidence last year, but this one is the first that uses gasoline. The new lawn-mower is said to do almost three times as much work as a horse-drawn machine. It not alone cuts the grass, but rolls the lawn as well, as it is quite heavy. It is equipped with a 4-horse-power motor and can go up a 10 per cent. grade and can be handled by almost any one.

A device which will save the automobilist much annoyance and trouble is an automatic tire pump recently introduced. This pump is so fashioned that it may be fastened to any artillery wheel and the inflating operation is performed by the turning of the wheel, so that the tire may be inflated while the car is in motion. The apparatus consists of a plunger pump that is fastened to one of the spokes, with a rubber tube connecting with the tire valve.

Steel Furnace Records Broken.—All the world's records for output and continuous run of open-hearth furnaces were broken during the four months ending January 15th, by the Talbot continuous process steel furnace of the Jones & Laughlin Steel Company, of Pittsburg, U. S. A. A total of 20,680 gross tons of open-hearth steel was turned out.

Americanizing the Holy Land.

AN American agent at Constantinople recently brought over for the Pennsylvania Steel Company a contract for 25,000 tons of steel rails. I. Zuhdi Bey, representing the Sultan of Turkey, brought over cash for payment and is supervising their construction and shipment at the mills. These rails are to be used in building of the Damascus-Mecca Railway, which is to form the main trunk line of the new system in Asia Minor. While the ostensible purpose of this holy railroad is to make safe the journeys of pilgrims between Damascus and Mecca, it is admitted by those in a position to know that the progressive Sultan's enthusiasm for railroads had its origin during military operations in his unpleasantness with Greece. By means of the old railroad between Constantinople and Salonica, the Sultan was able to mass 180,000 troops in Thessaly in short order and with good effect.

For all that it is conceded that he is ambitious to connect his fortresses and exposed seaports by rail for the purpose of quick movement of troops, it must also be granted that he recognizes the fact that government railways, wisely placed, must vastly increase the royal revenues from the transport of products and passengers, and that modern machines for manufactures and agriculture must enormously increase the products to be transported.

The representative of the Sultan is quoted as having said, apropos of America's trade in the East: "Turkey opens dazzling chances for the American manufacturers to take part in the modernizing of that part of Asia Minor called the Holy Land.

"There is a wrong impression prevalent in America, both in business and political circles. Turkey pays cash and wants the best in the market. Fair dealing wins there every time. America should put forth its best efforts to obtain Turkish good will and send the right kind of agents to capture its markets for exports of real value. Turkey is a big, rich country, full of rich and exceptionally well-educated men.

"It wants modern commodities and wants to know modern methods of using them. It is ripe for American enterprises. The necessity of sending fully authorized agents was emphasized in my case. The Turks do not understand the names of the American corporations and cannot translate them. The contract for the steel company was made with me in my name by Ferid Pacha, Grand Vizier. Only in the French duplicate does the name of the corporation appear."

The Sultan is buying all railroad charters heretofore granted and announces that the Empire will build, own and control its own transport lines. He has already bought the Jaffa-Jerusalem road, an undertaking carried out a few years ago by an American. He has granted to Boston capitalists a concession to build hotels at the famous springs of Lake Tiberias, and of operating a fleet of excursion steamers for tourists. The Sultan also declares his willingness to grant such concessions throughout Asia Minor, and to furnish ample police protection as encouragement to the traveling public.

An American motor car line is projected to cross the desert with the mails, and the Sultan's mails have the right of way.

While railways have wildly excited the natives of Asia Minor, nothing so completely "broke up the meeting" as the arrival of a great American harvest thrashing-machine. At Beirut it was loaded on a flat car for Damascus. When installed in the 5,000-acre grain field of Najib Sursock Bey, a Turkish millionaire, it required all of Najib's oxen, camels and asses and all of his men to feed its capacious maw with unbound grain, bruising the straw for fodder, shelling and bagging the wheat in short order. The great machine sounded the death knell of the laborious toil of animals and men that led Moses to command that "thou shalt not muzzle the ox that treadeth out the corn." Since then hundreds of modern agricultural machines have been imported from America, liberating the patient oxen, camels and asses. Horut, now the Manchester of Syria, mobbed the first railway train arriving and stoned the house where an American machine agent was supposed to be staying.

Over the entire plain of Esdraelon nothing but American farm machinery was used during the last summer. So convinced are the capitalists that Syria is the richest natural grain area of the world that Turkish millionaires have been purchasing vast tracts of lands to cultivate them entire, and are importing our largest steam plows, harvesters, reapers, harrows, windmills, rakes, forks, hoes, cultivators, rollers, oil grist mills, olive presses, etc. At the front of the Americanization of the Holy Land is an enthusiastic Turkish millionaire of Beirut, Michael Effendi Nesser, who declared that he would convert Syria into an American agricultural exposition, which it is certainly beginning to resemble.

Only those who are familiar with the Holy Land can even dimly conceive what these **vast** changes mean to the natives, the Bible scholars and tourists of the world at large. Until the American invasion of material things not a custom had changed since the time of Moses.

Cuba's Credit Good.—Financially Cuba has a first-class reputation in the markets of the world. The $35,000,000 Cuban bond issue was offered at about 98 in May, and the bonds are now quoted around 102½. The participators in the syndicate, who were not at any time called upon to put up any part of the amount which they were responsible for, received in all $4,845 for each $100,000 guaranteed.

Steel Boats and Barges.—A company has been organized in New York City for the construction of steel canal-boats, barges and scows—vessels built in such a way that they can be unloaded by means of scoops worked from derricks operated by steam. The shipyards of the company will be located at New Haven, Conn., U. S. A.

Santo Domingo in America's Care.

BY the terms of a protocol recently signed the United States on the first of the present month assumed a temporary fiscal protectorate over the Republic of Santo Domingo. The assumption of this care over the financially embarrassed island is not of America's seeking, but comes as the result of repeated urging on the part of interested Powers and by direct invitation from President Morales. For many years the Dominican Republic has been going from bad to worse. Were the affairs of that country alone at stake the situation would be serious, but what gives the case added gravity is the fact that many European Powers are directly interested. The Powers have of late been very insistent in their demands on the well-nigh bankrupt Government. There was therefore an international demand for immediate action, and this demand took the form of an almost unanimous choice by the Powers of the American Government to undertake the adjustment of all obligations, and, if possible, to set the little Republic once more squarely on its feet. The fact that Dominica voluntarily sought the present arrangement should assure her cooperation in America's efforts to redeem her credit and save her from ruin. The task is not an easy one, but during recent years America has become used to difficult tasks. She does not shrink from the undertaking.

The principal conditions of the protocol are that the American Government guarantees the complete integrity of Dominican territory, agrees to undertake the adjustment of all obligations of the Dominican Government, foreign and domestic, and the conditions of payments, to adjust unreasonable claims and to determine the validity and amount of pending claims. In the case of the appointment of one or more commissions to reach such an adjustment the Dominican Government will be represented in order to protect its responsibility. The American Government will take charge of the existing custom houses and those hereafter to be created and will name the employees necessary to their management, the duties they will exercise and their rights. These will be considered Dominicans and subject to the laws of the Republic.

The Dominican Government will have at each custom house inspectors in behalf of its interests from after the date the contract takes effect. The present employees are to be considered as acting under its provisions. Out of the revenues collected at the custom houses of the Republic the American Government will deliver to the Dominican Government 45 per cent. of the total of the gross amount for the purpose of attending to the necessities of the budget. It is estimated that the first year $90,000 will be receivable monthly. The advance payments are divided into four instalments in the following manner: $18,750 on the 1st, 8th, 15th and 22d of each month. In case the total revenues of the first or any subsequent year are less than $2,000,000 the payments may be proportionately decreased.

Out of the 55 per cent. the American Government will pay the employees of the custom houses and the interest on the amortization of the foreign and domestic debts. The whole surplus may remain and each fiscal year will be delivered to the Dominican Government and devoted to the payment of its debts. No changes in the present import dues or port charges will be made without the consent of the American Government until the debt is completely paid. Excepting export dues the Government has the right to abolish or reduce dues immediately.

The American Government, at the request of the Dominican Government, shall grant such other assistance in its power to restore the credit, preserve order, increase the efficiency of the civil administration and advance the material progress and welfare of the Republic.

Gigantic Turbines and Dynamos.

FOLLOWING closely upon the announcement of the successful operation of the two 10,000-horse-power turbines and dynamos of the Canadian Niagara Falls Power Company, the largest in the world, comes the installation of the California system, which is even larger.

The vertical fall of water on the turbine wheels at Niagara is 160 feet, while the California perpendicular ranges from 500 to 1,800 feet. The power developed by the Niagara turbines was of 12,000 volts, and that of California's, is of 40,000 volts, increased to 50,000, 60,000, 70,000, or even higher, as needed to minimize losses incurred in transmitting power over long distances, involved in a radius of upward of 250 miles.

They supply power for the most diversified mining, manufacturing and traction industries; operate Cornish pumps and mining hoists of the deep gold mines of the mother lode, and drive the street cars in San José, 200 miles distant. They operate the gold dredges of Feather River; light electrically twenty-odd cities and towns; pump water for municipal supply; irrigate districts and supply water to reclamation tracts; run the flour and woolen mills of Marysville and railway shops of Sacramento. In addition, they run the flour mills of Vallejo and Port Costa; the wheels of the navy yard at Mare Island; the powder works at Pinole; the smelting and manufacturing companies along San Pablo Bay; the State institutions at San Quentin and Napa; the street cars and printing presses of Oakland, and operate in seventeen counties, the most populous of Central California, containing one-half the population and three-fifths of the assessed value of the State.

Other States have gigantic electric plants, and New York City consumes more horse-power of electricity, but California is an entire great State run by electricity by long-distance transmission. The significance of the growth of electric power in California, however, is seen in the gradual emancipation of that State from absolute railway domination and in the increase of all kinds of manufactures and in the population in that State.

Refrigeration of Dairy Products.

AN interesting address was recently delivered before the American Warehousemen's Association by an official of the Department of Agriculture, Washington, in which he gave a review of the work of the Dairy Division of the Department relative to the refrigeration of dairy products. It appears that in 1902-1903 the division carried on cooperative experiments with the New York and Wisconsin stations in the cold-curing of cheese, the object being to study on a commercial scale under commercial conditions the influence of different temperatures upon the cheese during the curing process. About five and one-half tons were used in the experiment and all types of American cheese were obtained, ranging from the firm, typical Cheddar cheese suitable for export to the soft, open-bodied moist cheese intended for early consumption. Cheese of different sizes were also included, their weight ranging from 12½ to 10 pounds. Three temperatures—namely, 40, 50 and 60 degrees—were used. The commercial quality of the product was determined by a jury of experts who were thoroughly in touch with the demands of the market.

The advantages of curing cheese at a low temperature were very apparent, and the results of the experiment were of value to the dairy interest of every country. The experiment proved that cheese can be held a long time at low temperatures without impairment of quality. The commercial quality of cheese covered with paraffin was favorably influenced. The loss of moisture was greatly lessened, and the cheese were perfectly clean and free from mold, while all the cheese not treated with paraffin were covered with mold. By utilizing the combination of paraffining cheese and curing at low temperatures the greatest economy can be effected.

The results suggested the idea that the time may come in the near future when cheese will be shipped to cold storage immediately after making. The curing of the cheese, then, instead of being the work of the cheesemaker, would become a branch of the cold-storage warehouse business. The results are sufficient to warrant a considerable expenditure on the part of cheese producers in installing cold-curing stations.

To Take the Place of the Horse.

CAPTAIN FLATEAU, an inventor of St. Louis, Mo., has just perfected and secured a patent on a motor which he claims will perform all the duties of the horse in the city and country in the moving of all kinds of wheeled vehicles.

The contrivance consists of a driving motor, mounted on two wheels. Primarily, it is designed to take the place of the two front wheels of a wagon or carriage. It may be attached to any four-wheeled vehicle intended to be drawn by horses by simply detaching the front wheels and tongue. No alterations are required in the body, rear wheels or the seats of the vehicle. With this attachment the conveyance may be run backward with the same power or speed that it is moved forward, and it may be turned at an angle of forty-five degrees to the right or left, the inventor claims.

This, however, is only one of the uses to which the invention may be put. It can be detached from the vehicle by unscrewing the few bolts required to fasten it to the wagon bed and used for hoisting, driving machinery or for drawing any kind of agricultural implement, from a plow to a self-binder.

Power for the motor may be supplied by electricity, gasoline or steam. All of the machinery is inclosed in a wrought-steel case, which contains room for a gasoline engine and tank, steam boiler and engine or storage cells and motor. On account of its simplicity, electricity probably will be used in cities where the storage batteries can be conveniently recharged, but for general use Captain Flateau believes that gasoline will be the most practical method of supplying power.

The claim is made for this apparatus that it can be guided more easily and quickly than any other, and that it reverses without a shock, as there are no clutches to come in contact with one another.

City Refuse for Electric Lighting.

IT has been determined that the refuse of the city of New York, which is now removed at considerable cost, could be utilized and become a source of considerable revenue to the city, especially of applied to the generation of electricity. This refuse, if burned scientifically, would supply the city with three times as much electric lighting as that for which the city now pays. At the present time $1,000,000 a year is paid for electric lighting, of which half could be saved and almost $2,000,000 earned by selling electric lighting to private consumers. In some cities the refuse is sold to concerns which convert the same into valuable commercial products, as oil, glycerine, fertilizer, etc. Sewage is also being utilized in the same manner, and instead of being a burden of expense it has become a source of revenue.

Canned Beef for Russians.

SHIPLOADS of provisions continue to depart from Pacific Coast ports for the Far East, presumably for the Russian army, which the Government of that country is now trying to supply from the United States since the breakdown of communications on the Siberian Railroad. Several steamships have left Portland with cargoes of canned beef and oats, and other vessels will follow. They have the Japanese naval scouts to evade before reaching Vladivostok, where ice-breakers keep the harbor clear for them. American consignors run no risks, as they are paid in advance.

Canada, the World's Granary.

WESTERN Canada, from the Red River to the Rocky Mountains, has yielded an estimated wheat crop for 1904 of 65,000,000 bushels, an increase over 1903 of nearly 25,000,000 bushels, according to a correspondent of the Boston *Herald*. This fact is significant, when it is borne in mind that this crop was practically non-existent twenty-five years ago, and that there are areas of wheat-growing land yet to be brought under cultivation in this prairie country, compared with which the present acreage under cultivation is a mere speck upon the map.

Taking into consideration also the growth of wheat consumption in the United States, the development of the Canadian wheat belt assumes an importance which must be felt in the markets of the world. The local consumption in western Canada is only about 15,000,000 bushels. This means that of a crop like that of this season 50,000,000 bushels must find its way East and take its place among the exports of the Dominion of Canada.

The handling of this great crop is a serious matter, and is all the more serious because the farmer of western Canada is, as a rule, little else than a wheat-grower, and upon the success of the wheat crop depends his wealth, his living, and often actually his solvency.

The Canadian has as completely pinned his faith to wheat, as the ranchman of the Southwest has staked his all upon cattle or horses. Consequently every effort that the Government and railway companies can make is put forth to aid in the safe harvesting and shipping of the wheat.

Organization is indispensable in every detail. The joint efforts of the Manitoba Government and the railway companies are exerted to transport from the East an army of harvesters, aggregating over 20,000, without whose assistance the cutting and thrashing of the crop would be absolutely impossible, for the development of inventions in the way of farm machinery has made it feasible for a single man to plow, prepare and sow in wheat an area so great that he could scarcely commence to garner his crop without this imported help. Many of the newcomers are American farmers, and almost all have some working capital.

The last fifteen years has seen a vast change also in the system of thrashing and marketing the grain. Formerly when each farmer had but a few acres and when 100 acres under wheat was considered a vast crop for one man, every sheaf of wheat was stacked and the farmer busied himself with other duties until the regular order of things brought him his turn for a visit from the peripatetic thrashing-machine. Then a call was sent out among his neighbors, who rallied round him, and the work of thrashing was almost an interchange of courtesies among friends, who worked all day, and in the evening spent a few hours in songs and stories before dispersing homeward.

Now even in the newest settlements the spirit of the times has taken hold of men, and the tendency is to advance with more rapid strides toward big acreage than was usual, or, for that matter, possible, in the pioneer days.

So the rapidity with which the prairie is being broken up for wheat has produced a new system, and the thrashing outfit is moved into the midst of the fields where the wheat is standing, and all the farmer has to attend to is the paying of the bill. The thrasher brings along his whole gang, with teams and wagons, his own tents and cooks, takes possession of the farm, and hauls the sheaves from the field to the huge machine, which whirls out as much as 2,000 bushels of wheat in a day.

In another way, also, the wheat has outgrown the capability of the grower to take care of it, for many farmers have no conveniences for storage on their own farms. This lack has been made up for by the erection of grain elevators at every station and siding in the wheat belt, to which a large proportion of the grain can be hauled direct from the thrasher, and where, in lieu of having the actual wheat in his own barns, the farmer will get a receipt for the amount of grain in store, of a certain specified grade, which he can convert either into cash immediately, or, if he be of a hopeful or speculative disposition, retain the receipt, and consequently the possession of the wheat, to sell it at some future date.

With 750,000 bushels pouring daily into Fort William, and almost a like amount received at Port Arthur, nothing can deal with the grain traffic but the most efficient systems of caring for and disposing of the wheat when it arrives. And it is this necessity for speed in handling that has developed the elevator system of the two railway companies at their respective terminals, where there was available at the close of navigation this year a storage capacity of 17,000,000 bushels, or actually sufficient to house one-third of the export wheat of western Canada.

The first crude attempt at steel tank storage was made by the Canadian Pacific Railway, when its fourth elevator was built, consisting of flat-bottomed tanks, holding 1,500,000 bushels, which gave ample storage, but offered no facilities for handling with any degree of speed. This style was speedily superseded by the more modern tanks, built with hopper bottoms, making each tank self-emptying.

A Chicago construction company has just completed two magnificent elevators in Fort William, one for the Canadian Pacific and the other for a large milling firm. The new Canadian Pacific building has all its storage built of tile, strengthened by steel bands, and has a capacity of 2,000.000 bushels.

The application of machinery to the handling of wheat has rendered it possible to unload at any single storehouse almost 250,000 bushels in a day, though the Fort William elevator is able to unload nearly a million bushels in a day, and the Port Arthur elevator can take care of 500 carloads within twenty-four hours.

When the grain has left the hands of the grower and come into the regular channels of trade, the responsibility of grading rests with the Government. It is regarded as of the utmost importance to the reputation of Canada as a wheat-producing country that no chances should be run of inferior grades being mixed with higher grades in such a way as to defraud the purchaser.

To serve this end, every car of wheat as it comes into the yards of the lake terminals goes through the hands of the Government inspectors, who fix the grade, and whose judgment is final. Other inspectors take charge in a similar manner of all outgoing grain, so that a purchaser of wheat, whether he be in Liverpool or in Yokohama, can rest assured that when he has the Fort William or Port Arthur grade given him he has the guarantee of the Dominion of Canada behind it.

Dining Cars on Trolley Lines.

AN innovation, and one that gives promise of becoming popular where considerable distances are traversed by trolley lines, is the buffet car. One of the electric transportation lines having its termini in the States of Ohio and Indiana has for some time supplied its patrons with conveniences and comforts not usually found on trolley lines, and so popular have these become that they have added buffet cars, wherein the traveler can appease his hunger and at the same time enjoy all the comforts of the most approved railway coaches to be found on the trunk railway systems. The distance this unique line traverses is covered in about an hour and a half, but the service is so acceptable to the patrons that the management has determined to make traveling by this route as luxurious as the most exacting could desire. The only difference in appointments between this electric line and one of the transcontinental flyers is that the former has no sleepers. The parlor car, however, is of the newest model, the movable wicker chairs are comfortably upholstered and broad windows give travelers a chance to view the surrounding country through which they fly, as though they were occupying an observation car.

Once inside the Interstate Limited all suggestion of a trolley line is lost sight of. The highly polished woodwork and trim, the soft velvet carpet, the electric globes, all, in fact, are on the highest scale of elegance and luxury. When the luncheon hour arrives regular little buffet car tables are set up, and travelers may avail themselves of a dainty and appetizing menu, which offers choice of tempting and appetizing viands at a moderate price.

Business men find the buffet a great convenience, for they can leave either end of the road just before luncheon, or even at breakfast hour, and arrive at the other terminus ready to begin their important business affairs without delay. The time thus saved, both by the traveling speed and the possibility of lunching quietly and without a rush en route, makes the new electric line of incalculable value to the public. One car on this trolley train is devoted exclusively to smokers. Their comfort and wants have been as carefully studied and provided for as though the passengers were embarking on a journey to the Pacific slope. There are two rows of leather-cushioned chairs in this compartment, and card-tables and smoking requisites are at hand to increase the personal comfort of those who are eligible to the smoke-shrouded section.

Special tickets are required from those who avail themselves of this superbly equipped trolley line, and following the precedent established by some of the special trains on other railroads these trains carry no baggage. All trunks, bags and luggage must be forwarded on ordinary electric trains either preceding or following the de luxe special.

So successful and popular is this experiment that already other trolley lines are making preparations to add buffet and smoking cars, and it is probable that in a comparatively short time what is now regarded as a novelty will become generally adopted and the public will expect the same luxurious appointments on the principal interurban trolley lines that it has for some years enjoyed on the great passenger lines.

Electricity on the Farm.

THE credit of being the first to make an extensive and practical use of electricity on the farm belongs to the farmers of the State of Illinois. The current that is used by the electric railroad lines is being switched to the farms through which the roads run for the purpose of running feed-choppers, pumping water, sawing wood, operating creameries and for many other purposes. It is claimed the power will be made use of to plow the fields and to cultivate crops. Many farms employ electricity to illuminate farm houses and buildings.

One farmer by the use of an electric motor installed on his farm, thrashed corn, cut feed, ground grain, separated milk, pumped water and sawed wood at an average monthly expense of $4.45. This work was done in 60 per cent. less time than if it had been done by hand power. Other farmers have used the same kind of power for varying periods at a cost ranging from $3.20 to $7.40 per month. Each farmer reported that the cost is from 40 to 60 per cent. less than if animal or man labor had been utilized to do the same amount of work.

When one considers the wonderful increase in the number of the electric rail lines some idea of the possibilities in this direction may be gained. If the farmers adopt the use of electricity as a farm power they will have abundant opportunity to contract for a supply of the current that the rail lines are stretching across the fields from one end of the country to the other.

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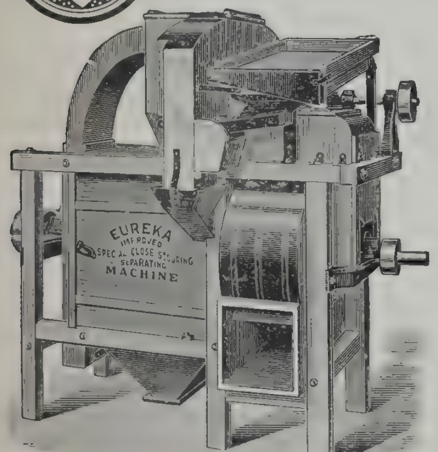

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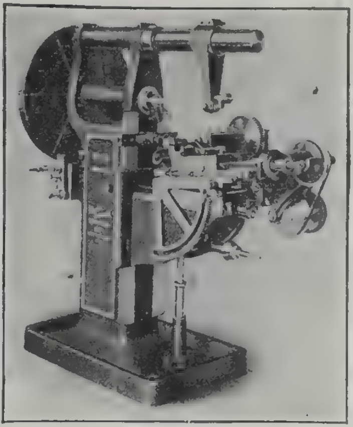

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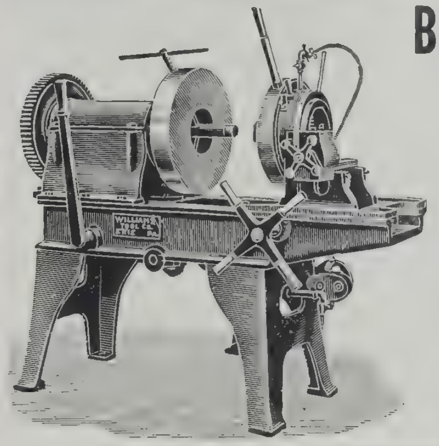

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China's Great Love of Peace.

THE Chinese Minister at Washington, Sir Chentung Liang-Cheng, made an address in Philadelphia, December 17th, before the Academy of Practical Sciences, in which he said: "The rise of a great people is, as a rule, the result of long and successful struggles against hostile neighbors. Such was the beginning of the Greeks and the Romans. Such was the beginning of the modern nations of Europe. Far different, however, was the case with the Chinese. They seemed to be more concerned with problems of material improvement than with measures of offense and defense. Accordingly, the first pages of Chinese history are not given, as is usually the case with the history of most nations, to providential escapes, heroic exploits, bloody battles and stubborn sieges, but to inventions and discoveries, which enabled the Chinese people to attain a high plane of civilization long before many others could emerge from barbarism.

"The invention of writing was one of the first achievements of special importance. Among the other benefits of civilization, the origin of which the Chinese have traced to the remote past, may be mentioned the establishment of public fairs for the exchange of commodities; the use of nets in fishing and hunting; the rearing of silkworms; the cultivation of the various kinds of grain; the use of medicinal plants for the healing of diseases. From the beginning the arts of peace were cultivated seemingly to the exclusion of the arts of war.

"The pacific beginning of the Chow Dynasty, about 1,000 B. C., presented a striking contrast to its turbulent future. During the centuries under its rule China was a veritable armed camp. It was a time when the nation was divided against itself. After 500 years of continuous warfare the country, thoroughly exhausted, at last reunited under the undisputed sway of the Dynasty of Tsin. The princes of this imperial house made their power so strongly felt from the Pacific to the Caspian that the country over which they once ruled with an iron hand has ever since been called, by the people of the West, China, which is only another form of Tsin.

"In the midst of this internecine strife rose the most majestic figure China has produced—Confucius. The horrors of war were revolting to his noble nature, and he raised his voice against such inhumanity of man to man and the shedding of fraternal blood. The spread of Confucianism sounded the knell of militarism in China.

"Now, for 2,000 years China has not swerved an iota from steadily pursuing a consistent policy of peace. This may be put down to the fact that all the men who have played a prominent part in Chinese affairs have invariably been true followers of Confucius. The result is that in China the saying 'the pen is mightier than the sword' is not a high-sounding boast, but an active principle of Government. It is the scholar that is to-day the ruler of the Empire. The soldier holds a lower place. This subordination of the fighter to the thinker is recognized throughout the length and breadth of the land.

"It may be urged that Chinese people have brought much unnecessary sufferings upon themselves by their firm adherence to the principles of peace. It is true that they have left their country practically exposed to foreign invasions. They maintain no effective army; they have no battleships. These weaknesses are patent to all. He that runs may see them. But China's strength does not lie so near the surface.

"Strange as it may seem, the enlightened opinion of the world is steadily coming around to the position taken by China with respect to militarism. Now the greatest powers of the world seem to come to the same conclusion. With the view of reducing the possibility of war as much as possible, arbitration is the method now best recommended for the settlement of international disputes. This is a step in the right direction. But as long as nations are armed to the teeth, there is always a strong temptation to test the effectiveness of the weapons they possess.

"As long as there is powder in the magazine there is always danger of an explosion from a flying spark."

Renting and Selling Sleeping Cars.

AN advertisement appeared recently in a daily paper offering two sleeping coaches for sale or rent, and this prompted an investigation which had interesting results. The cars advertised had been used as traveling photograph studios. There are many such scattered over the country. They are sidetracked at small towns for a few days, then they move on to another "stand." Others are used by railroads in securing views for their advertising. Still others are used by agents of all kinds who canvass in large groups.

It would be difficult to estimate the number of cars owned by amusement promoters. One not particularly conspicuous theatrical manager has half a dozen. Scores of circus, minstrel, dramatic and operatic organizations own or lease the cars in which they travel and live, and hundreds of cars are in the hands of carnival companies and all manner of strolling entertainers.

To such an extent is this true that dealing in these movable hotels has developed into a recognized industry. There are several men who make it their exclusive business. A good car rents for from $25 a week upward under bond to insure its return free from all costs to the point where it was secured. From twenty-four persons to more than twice that number find living accommodations aboard an ordinary "show" car. The majority of such cars are such as has been thrown out of service by the ever-growing demand for larger cars and more elaborate ornamentation. They are held at from $2,500 to $6,000 or more each.

The Land of Promise.

I STOPPED at Calgary, just in the eastern shadow of the Canadian Rockies, to see the digging of the biggest irrigation project in America, excelled only by one in India and one in Egypt. I expected to see an army of men with shovels, and saw not one shovel. Instead, three colossal steam giants, with monstrous arms which dipped down, took a huge bite out of the earth, rose slowly and dropped the dirt to one side. Dipping and biting, these three machines advance just about 100 feet a day, leaving in their wake a ditch which is the size of a small river, 60 feet wide and from 12 to 20 feet deep. This ditch begins at the river and crawls in a curving course something over a score of miles into the country. The biggest irrigation ditch on the continent is simplicity itself. There is nothing complicated about an irrigation plant. It's just an old-fashioned mill-race on a big scale. You tap the river at a high level, run your ditch along that level, with just the slightest drop that will make water flow at all. Then from the big ditch you run smaller lateral ditches, and from these still smaller ones, till every few acres has its little rivulet. The ditch at Calgary will supply an area of about 150 by 50 miles, and water nearly 2,000,000 acres—more territory than is included in some Eastern States. When the work is done—but what irrigation will do for a semi-arid country is an old story. And yet, just the elements of it may bear retelling.

Farming with irrigation is as different from ordinary farming as hothouse gardening is from raising wheat. Farming with irrigation comes very close to being an operation in chemistry. You have your sunlight, you have your soil, in fixed quantities and of known chemical constituents. You add your water in quantities as needed. And if you wish, you can put fertilizing elements, salts of potash, for example, in your water, and then farming is a matter of chemistry indeed. And the results to the farmer are as different as a chemist's operations must be from the results to a farmer who lets the caprices of the weather govern the supply of one of his principal ingredients. If a piece of ground which depends for water on rain will raise 100 bushels the same piece irrigated will raise 500. Twenty acres irrigated will support a family in ample comfort, and forty acres irrigated is as large a farm as one man can well manage.

But after all the biggest irrigation project on the American continent is merely a big ditch. When one seeks for the broader significance of this big irrigating project here on the Western plains of Canada, one wonders at first why such work should be done at all. Canada has literally millions of acres of fertile land which does not need irrigation. Canada is so rich and prodigal with fertile land that she gives it away—160 acres to any man who will merely settle on it and improve it. The Canadian Pacific Railroad is almost equally rich in land. It has millions of acres which it sells at $4 and $6 an acre. Why, then, this costly irrigation of waste land, as if land were scarce? The explanation made by people here which may be true is this: The Canadian Government and the Canadian Pacific Railroad are absolutely sure of Canada's future. They are preparing for the time when their free land will all be gone.

The situation, compared with that of the United States, is like this: Winnipeg, with about 60,000, is Canada's Chicago; Vancouver, with about half as many, is Canada's San Francisco. In all the vast country between those two—it takes three days to cover on a railroad train—there is but one town of over 10,000 people. It is as if we at home had no Denver, no Omaha, no Minneapolis, no one of a score of cities. That, in a few decades Canada will have its Denver, its Omaha, its Kansas City, is as certain as the cooperation of Government, railroad and a tremendous stream of eager immigrants that jostle each other for an early chance, can make it.—MARK SULLIVAN *in Boston Transcript*.

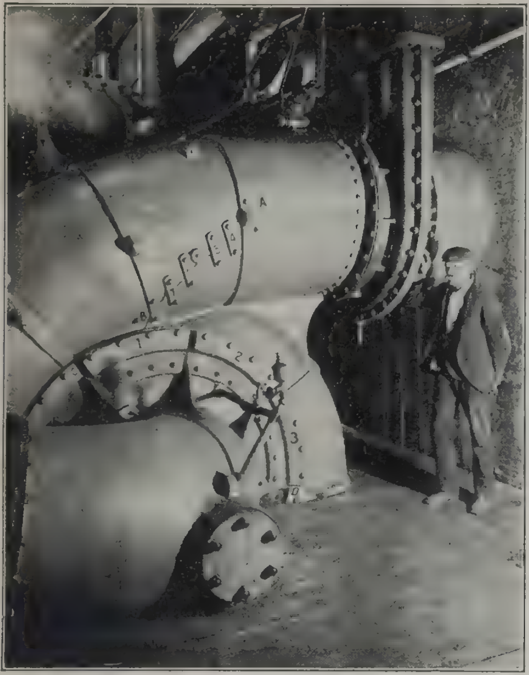
American Silk Industry.

MORE raw silk is now consumed in the United States than in any other country in the world. At present there are more than 500 silk manufacturing establishments in this country, employing some 75,000 wage-earners. The value of the products of these mills last year was over $125,000,000, and 11,000,000 pounds of raw silk was consumed in their making. A greater quantity of raw silk was sold during the year in New York than was consumed in the whole of France, which is the largest silk-consuming country of Europe.

To provide features of novelty in designs and in character of manufacture every large silk plant in the United States has now a school of design, where scientific and technical education is taught, not only along American lines, but by means of association with artists and establishments abroad. Skilful chemists likewise are attached to these plants.

Powerful Pumping Machine.

THERE has recently been installed in Milwaukee, Wis., U. S. A., a screw pumping machine, which is probably the most powerful contrivance of its kind in existence. It forces 500,000,000 gallons of water through a 12-foot tunnel from Lake Michigan into the Milwaukee River every twenty-four hours. The pump proper is a modified form of propeller wheel with screw-shaped blades. It is set in an iron pit far enough below the intake level to keep the wheel always submerged, whether it is running or at rest. The small amount of fuel consumed in proportion to the large amount of work performed has established the machine's reputation as a modern mechanical wonder.



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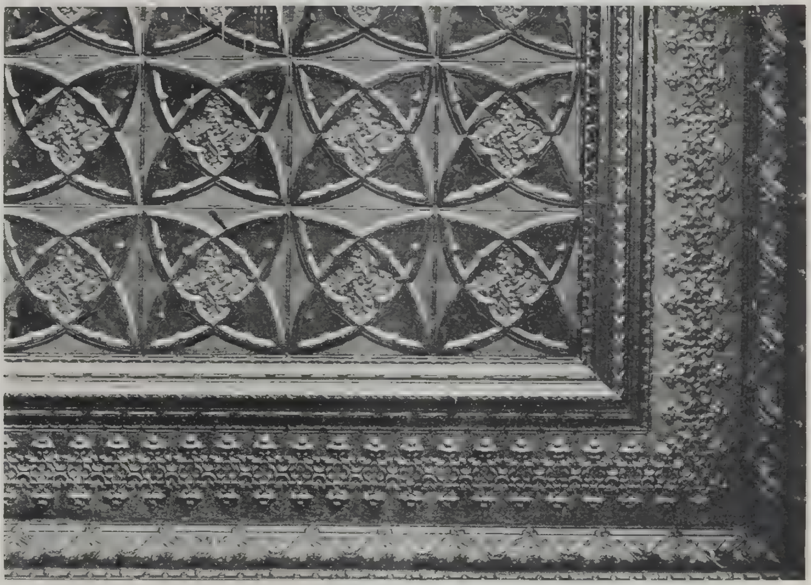

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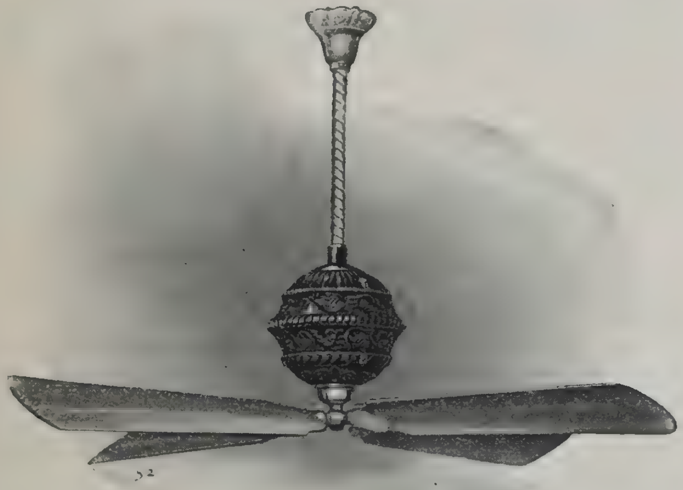

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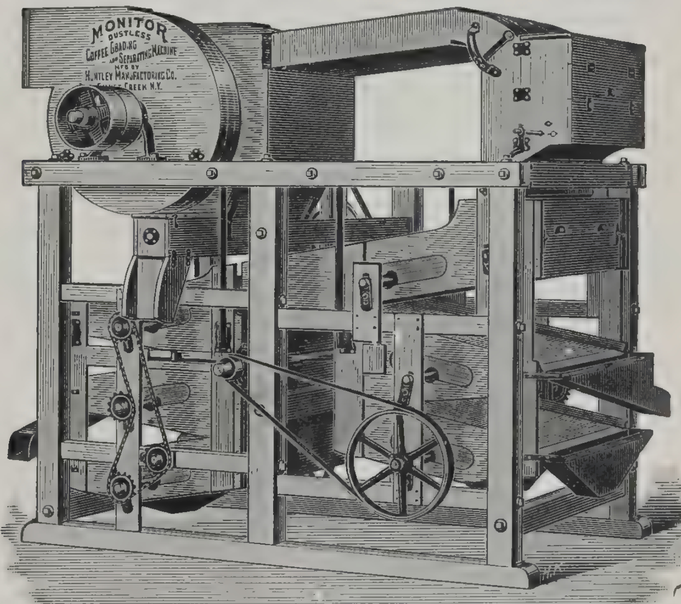
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Mahogany Retains Its Popularity.

MAHOGANY, although at times apparently for a time eclipsed by other woods in obedience to fickle fashion's decree, is, nevertheless, the most popular of the expensive woods, and while some other wood for a time has been popular it is mahogany alone which has for generations been held in highest esteem for household appurtenances. The first-known mention of it is in connection with repairs on Sir Walter Raleigh's ships in Trinidad in 1597. Then, near the end of the seventeenth century, a Captain Gibbon took to England mahogany logs as ballast from the West Indies. His brother tried to use them in building a house, but the workmen refused to handle the wood, claiming that it was too hard. A piece of this mahogany was sent to a cabinet-maker, who made a box of such rare beauty that the wood jumped into instant popularity.

Mahogany has come into more general use in this country within recent years. Ten years ago oak was in demand. The public bought, and wanted more, until the price of oak went up. It came so near to the price of mahogany that the purchasing public began to show a disposition to pay the difference and get the more expensive wood.

The demand for mahogany in this country has been heavy during the past few years, due largely to popularity of the wood for decorative purposes in large buildings. The large number of sleeping and dining cars built to accommodate visitors to the World's Fair at St. Louis also stimulated the demand. Among dealers it is said that no finer mahogany can be found than some of that used for panels in the finest parlor and drawing-room cars.

With the price of wood so high that a good part of it goes into veneers, and cabinet-makers called upon to find use for what in other woods might be scraps, there are in the yards of some of the larger firms handling mahogany millions of feet of it, while steamers specially built for the carrying of mahogany are arriving at regular intervals. One of these will bring a cargo worth $100,000 from Honduras, or Nicaragua, where the wood is cut on thousands of acres, employing hundreds of men, and carrying the logs to the coast over railroads built for that purpose.

Homes for American Embassies.

IT is highly probable that if the American residents at Paris carry out their purpose and purchase a home for the American Embassy in that city it will result in action by Congress to purchase or erect residences for its diplomatic representatives in the principal capitals of Europe. The question of this Government furnishing residences for its diplomatic representatives abroad has frequently been discussed by the State Department, and propositions have been made to Congress to secure at the principal capitals of Europe homes for our Embassies and Legations.

The Boxer troubles in China induced Congress to make provision for establishing the Legation at Peking in a house owned by this Government and on ground which is under the exclusive jurisdiction of the United States. With that exception all our diplomatic representatives are housed in rented properties, the rental of which is paid for the most part from the private funds of our Ambassadors and Ministers.

The principal countries of Europe have their embassies lodged at Washington in houses owned by the several Governments, and, in addition to freedom from house rents, their representatives have liberal allowances for contingencies, and in some cases these contingent allowances exceed the amount of compensation fixed by the United States for its diplomatic representatives abroad.

Great Britain has had a fine, commodious residence in the fashionable quarter of Washington for the last twenty-five years. Germany has owned the building in which its Embassy is lodged there. Japan and Mexico own their own official residences, and France and Russia are arranging to have their Embassies established in homes owned by the respective Governments.

Corn Exports.

THE sudden expansion in the exports of corn from the Gulf ports to Europe which has recently occurred is not looked upon in the trade as a permanent condition. The shipments were mainly of corn that was bought several months ago for export at this season. New Orleans, Galveston and Mobile all have had quite heavy charters for this business.

The great competitor of the United States now in the matter of corn shipments is Argentina. The crop of that Republic is raised "to sell," in distinction to the production of this country, which is primarily for domestic food supplies. Last year Argentina shipped nearly 100,000,000 bushels of corn to Europe. For three years the American exports of this grain have been very small, compared with the years previous to the short crop of 1902.

When corn was selling on the average of 38 cents a bushel some years ago the annual American exports of it were in the neighborhood of 200,000,000 bushels.

Colored Food Labels.—The United States Department of Agriculture last month issued a circular calling for the enforcement of a decision requiring the branding of all colored foods: a statement on the labels that the contents are colored and the coloring ingredients. Where glucose has been used in the manufacture of food products the Department requires that the labels shall so state.

The Hot-Air Engine as a Farm Motor.

A HOT-AIR pumping engine that will meet the requirements of the farmer for a safe, light, powerful and durable motor ought to be interesting to our foreign readers. The simplicity of this engine, says the *Farm Implement Journal*, makes a strong appeal. There are no valves; neither is there an exhaust. No skilled operator is required. The power lies solely in the expansion of the air which follows the application of heat. The operator starts the fire, the engine does the rest. For fuel, wood, coal, gasoline, kerosene or gas may be used. The engine is "fool-proof," because there is nothing to explode. The maximum of durability is insured by the low speed. The motion is slow and steady, the piston rising gradually as the expansion takes place and descending as the cool water pumped from the source of supply is forced through the upper or cool end of the cylinder. The same air is used over and over, obviating the necessity of valves and an exhaust. The engine is noiseless. For country residences, where an independent water supply is desired, it can be placed in the basement and will not be heard in the room above. It is not necessary, however, to provide a warm place for the engine, as it is not affected by atmospheric conditions. This engine is an ideal motor for light work on the farm, such as running the cream separator, churn, fanning-mill, grindstone, etc.

Diamond Cutting in America.

THAT the United States is making an effort to transfer the diamond-cutting industry from the Old World, and is succeeding very well, is shown by a report issued by the Department of Commerce and Labor. The report states that the transference of the diamond industry from Amsterdam, London, Antwerp and Paris to American cities is highly desirable, and that we are reaching a condition where we can cut our own diamonds is shown by the fact that in 1898 the imports of uncut diamonds were worth $2,517,759; in 1902, $6,154,383; in 1903, $10,933,188.

The consular report, in alluding to the utter absence of figures showing the extent of diamond exportations from South America, says:

"As the majority of all South American diamonds, after passing through the hands of European traders and lapidaries, find a market in the United States, it follows that American dealers and purchasers have as much interest in the trade in them as even the London, Amsterdam, Antwerp and Parisian dealers and manipulators who buy and work them over and then sell them to American dealers."

To Give Away a Million Acres.

MORE than a million of acres of the Crow Indian Reservation are to be given away by the United States Government to white settlers during the coming summer. This land will be divided into 14,000 homesteads of 80 acres each, every acre of which will be under Government irrigation, so that failure of crops through lack of water will be impossible. The ceded portions include more than 100 miles of the valley of the Big Horn River and nearly 250 miles of the great valley of the Yellowstone. The work of constructing the irrigation system will be done by the Government, and its cost divided pro rata among those to whom homesteads are given.

The Crow Indians are among the richest people on earth, with rapidly increasing wealth and decreasing numbers. They have more than 100,000 acres of land under cultivation, though it is as cattle and horse breeders they excel. The English Government during the Boer war purchased thousands of their hardy little "scrub" ponies for use in South Africa.

Locomotives Exported.

FROM January 1 to November 30, 1904, there were exported, according to official reports, 491 American locomotives, valued at $4,525,746. This is an increase of over 100 per cent. over the number exported in the first eleven months of 1903, and a substantial increase over the corresponding period in the year 1902, when 354 locomotives were exported. British North America, Mexico and Japan in the order named were the three best foreign customers. The first took 156, as against 102, in 1903 and 112 in 1902; the second took 137, as against 67, in 1903 and 103 in 1902; the third took 90, as against 27, in 1903 and 32 in the corresponding period of 1901. Twelve locomotives were shipped to China last year, an increase of 5 over 1903 and 10 over 1902. Cuba more than doubled its orders, taking 28, as compared with 11 in 1903 and 11 in 1902.

Testing a Thrashing-Machine.—An American thrashing-machine was recently put to the test on a farm in Kansas to determine just how much wheat it could thrash and winnow in a given time. It was found that 50 bushels were run into the receiving wagon in eight minutes, or at the rate of 6½ bushels a minute. In 142 minutes 418 bushels were turned out, the machinery being three times stopped for some needed adjustments. The general result showed that one of the big machines would turn out on an average 3 bushels a minute from sun to sun, or well on toward 2,500 bushels a day, affording one among innumerable reasons why America is such a big country and increasing in wealth and power and prestige so rapidly.

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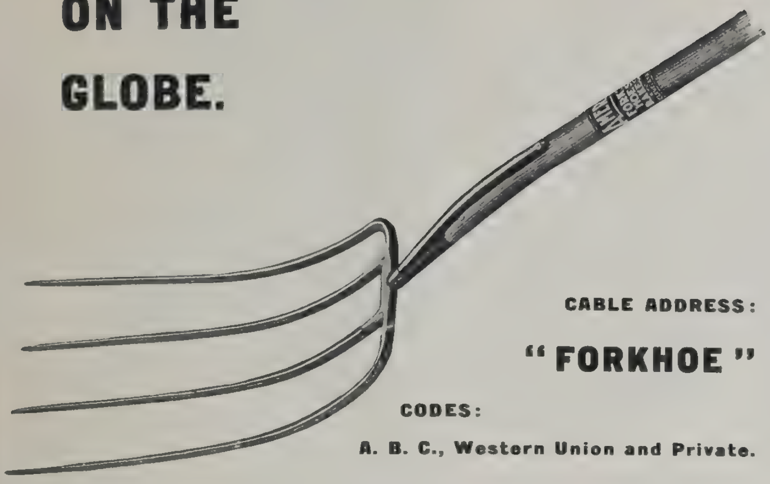

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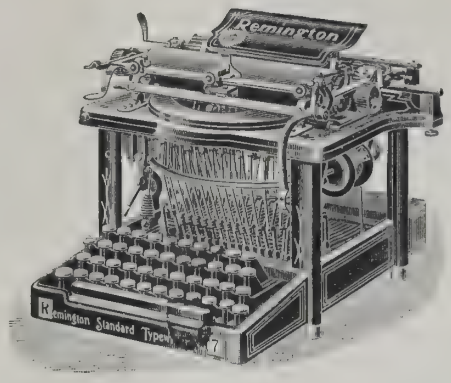

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The End of Steam—Gas a Deadly Rival.

LEWIS NIXON, the well-known shipbuilder, in an article published in the *Cosmopolitan,* says that writers often speculate as to the changes that might have been caused on the map of the world and in its history had some decisive battle turned out differently. In the realm of scientific progress, however, no matter how tortuous the path, all things eventually right themselves, and the best and most efficient are involved in the various lines of human endeavor. In this connection I have been thinking of late as to whether the line of development leading up to the use of the steam engine will not be shown in the very near future to have been a mistake. With a full sense of the fact that marine engineers are devoted to the use of steam and will feel a keen resentment against any one who makes the statement, I am fully convinced that the steadfast adherence to the use of steam has been a tremendous handicap to the progress of the world.

When one considers the remarkable strides made in the use of the internal combustion engine in connection with automobiles, where, by a few years of intelligent work, that modern miracle of the highway has been developed safely to surpass railroad speeds and to exercise powers on weights that are marvelous, one cannot but wish that this form of prime mover had been evolved concurrently with the steam engine. Had this been done, we would not now have to strain our belief to realize the flying machine as one of the necessities of modern civilization.

Every school boy has been taught to trace the heat loss from the coal in the furnaces of a boiler, up the chimney, in the ashes, leaks, radiation, etc. And yet with this loss appreciated and reckoned, we find the engineering world dallying with turbine engines when it could easily throw off the thraldom of steam and come, with far less experiment and far less risk than is involved in the development of the steam turbine system, directly to the internal-combustion engine. In large units? it may be asked. Certainly. The plants can be made of any size, and the gain in economy of fuel and of cost will advance with the size.

Can it be charged that such systems would be experimental? Men who so charge do not wish to see progress except along lines meeting their approval. Why, already the use of producer gas has reached such a degree of commercial efficiency that we produce a brake horse-power on less than a pound of coal. Can this be done in continuous service with steam under any conditions? The use of producer gas plants can almost be likened to burning your coal in a stove and having an engine run from the smoke-pipe.

Such a plant would greatly simplify the design of ships. The greatest problem before the ship designer is how to handle the boiler. The production of power by steam engine gets us back at once to the man-fired boiler. We must have air and space in which to shovel, fire-rooms whose size will prevent prostration from heat and bunkers much larger than should be necessary, on account of the waste of coal. When we get boiler space arranged, after obtaining every concession that can be squeezed out of all other factors, we proceed to build a vessel around it.

Can we predict the trend of development? I think the great strides made lately in the use of producer gas and the distribution of coal through the ports of the world will result in the use of producer gas plants on board vessels of large size with engines using gas made by such plants. The producers can be erected in less space than is now occupied by boilers, and it is already known that the gas engine can be produced of any size. In other words, we can proceed along lines already proved out, and cut our coal bill in half.

In torpedo-boats there is a decided advantage in the use of petroleum or gasoline. Take one of our first-class torpedo-boats developing 3,200 horse-power under forced draft. We would most certainly burn not less than three pounds of coal per indicated horse-power per hour, or say for ten hours we would use at least calculation 96,000 pounds. We can develop a brake horse-power on a gallon of gasoline for ten hours, or we would use 3,200 gallons of fuel in the ten hours. In other words, we can increase the radius of action of such a vessel more than three times on the same weight of fuel.

This assumes that a steam torpedo-boat can be run at full speed for ten hours under trial conditions. To get ready to force the steam-driven boat, we must take at least two hours coddling the boilers. During the run we must clean them, with consequent loss of speed and waste of fuel, while the strain upon the men of a constant full-pressure run of ten hours would be practically unbearable. The gasoline engines require no long working up of steam pressure, but are ready to start at full speed in an instant. There is no strain upon the men in the engine-room.

The economy of high steam is a very expensive one—expensive in the elaborate mechanism, in the character of material used, in the delicate construction of the boilers, in the training and unintermittent vigilance of the men and the repairs and overhauling which always seem to be needed about an engine using steam at over 200 pounds pressure.

Again, you rarely see "stand-by" losses and the cost of fresh water figured in with the expense, and any one who thinks the supply and use of fresh water an item to be neglected should consult some vessel owner.

There are no "stand-by" losses with a gas engine, and while the fuel costs more with gasoline than with coal, the saving in dead weight of machinery, in larger crew, in handling of fuel, in fresh water, and in many other ways, will probably overbalance the cost; while on a war vessel the gain in radius of action is beyond all price. With producer gas we have all the advantages of the gasoline motor, together with a much smaller fuel bill.

The use of such a type of engine in war is not confined alone to the water, as the armies of the world are already beginning to experiment and have produced traveling machine shops, portable electric plants for camplights and searchlights, and they will most certainly be used in transporting troops in any future wars.

In conclusion, I would say that this change will be a gradual one; that in some cases steam may be adhered to always, but for general use the change must come, and it has already in practical commercial use cut down the fuel bill to a point where the steam engine cannot hope to compete.

New Uses for Redwood.

THE California redwood has been chiefly celebrated in its primitive form of gigantic trees. Its place in modern mechanics has not been so extensively dwelt upon. Yet it occupies an important position in the trade and industries of the United States.

Humboldt County, which contains the larger redwood forests, has cut 52,000 acres of this wood, but still has left 486,000 acres. It is estimated that the acreage contains 49,000,000,000 feet of redwood lumber, which, at the present rate of consumption, would last some two centuries, according to a report published in the *Scientific American.* The uses to which redwood is put in California are almost innumerable, but its employment in the manufacture and use in stave pipe and tanks is of special interest. The principal uses to which redwood stave pipes are put include domestic water supply, irrigation, water power and outfall sewers.

But it is in the great mining, irrigation and domestic water-supply operations of the Pacific slope that the more striking features of the use of redwood stave pipes and tanks are observable. The stave pipes vary in size from an internal diameter of 8 inches to 9 feet, while one manufacturing company has in contemplation the construction of a pipe to have an internal diameter of 10 feet. The redwood tanks are used principally for the holding of water, but at the same time many are used for the storing of oil and wine, while they enter largely into the construction of cyanide plants for the separating of ores.

The use of the redwood stave pipe has been found especially favorable to hydraulic engineering, because of its lightness and ease of transportation. For the construction of pipe lines in mountainous countries, remote from railroad transportation facilities, it fills the bill almost completely, for the reason that it can be carried in the "knocked-down" shape. If need be, the staves may be lashed to the backs of burros, and thus carried into places absolutely inaccessible to a vehicle of any kind. When thoroughly seasoned the California redwood has a lighter specific gravity than almost any other known wood, weighing only about 2½ pounds to the board foot. The wood also possesses a great power of resisting decay, for the reason that it is very free from knots, seams and pitch.

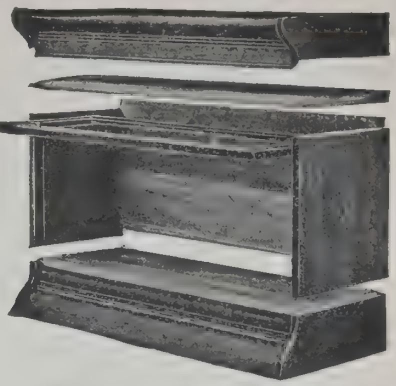
American Shoes and Shoe Machinery in Brazil.

IN a recent report on the trade of Brazil George A. Chamberlain, United States Vice-Consul-General at Rio de Janeiro, tells of the way in which American goods are capturing that market as follows: "In the suburb of Moóca, ten miles from the center of Sao Paulo, the new and important shoe factory belonging to the Companhia Calçado Clark (Limited), successors to Clark & Co., whose principal establishment is in Scotland, was inaugurated on October 22d. The factory is built on columns in wings and covers an area of 1,400 square meters (15,070 square feet). The internal partitions are made of wood, and all the sections are completely independent. The machinery is of the most perfect type. The monthly production is 15,000 pairs of shoes, which are to be sold in all the markets of Brazil. I have the further information to add that practically all the machinery is American; that the factory is built on American models, and that most of the skilled employees are American. In the last two years an American firm has been invading the Brazilian market, and its sales through a Rio house will attain this year a total of something like 4,000 pairs of shoes. It was doubtless this invasion of the Brazilian market which brought to a head the English plans for putting up a large model factory."

Reindeer Industry in Alaska.—The reindeer industry in Alaska has already reached significant proportions, and the plan for importing reindeer from Siberia to Alaska, which met with criticism and ridicule at its inception, has proved an enormous benefit to the Eskimos. The original scheme took note only of supplying food for the natives. Now it furnishes food, clothing, transportation and the opportunity of supplying an outside market with deer meat, and with cheese made from the milk of the does. As a means of transportation reindeers have superseded dogs for the United States mail and for general use, as they may be ridden and will carry a pack of 150 pounds without inconvenience.

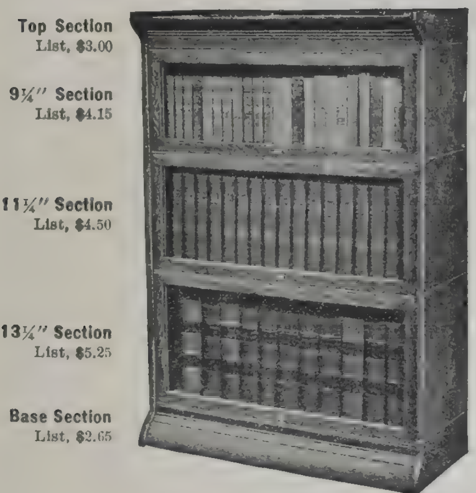
American Steel Building in St. Petersburg.—Quite the handsomest building of its class in Russia is that of an American sewing-machine company, opened recently in St. Petersburg. It is of granite, and the first building in the Empire in which the American steel construction system has been employed. This latter fact is of no little significance, as it marks the beginning of a new constructional era in Russia, and the development of a new market for American steel. It is as well a pointed indication of the awakening of the Russian public mind to the welfare of Russian commercial and industrial interests.

Knock-Down Office and Home Furniture for Export.
The "GUNN" K. D. Sectional Bookcases.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) **construction.** It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6¾ cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10⅛ inches deep and 32½ inches long. Made of selected quarter-sawed oak and handsome polish finish.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

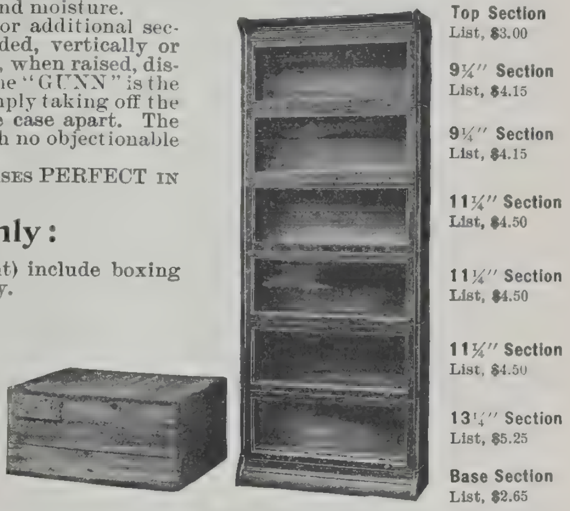
Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.

THREE-SECTION CASE, as shown, complete - - each $10.76
SIX-SECTION CASE, as shown, complete - - each $17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.



SIX-SECTION CASE.

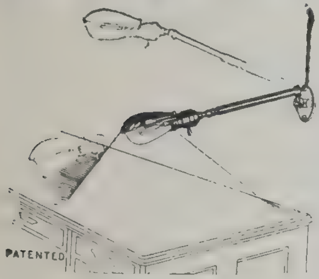
Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

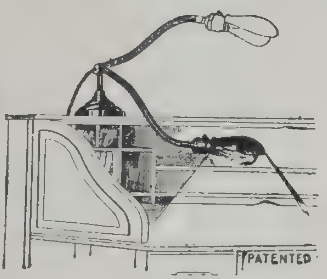
Western Union and A. B. C. Codes used. Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

ELECTRIC LIGHT FIXTURES



Style No. 40.



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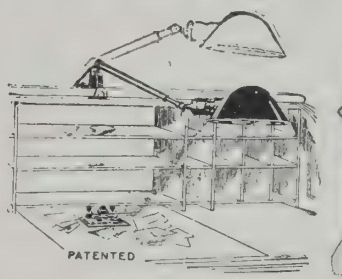

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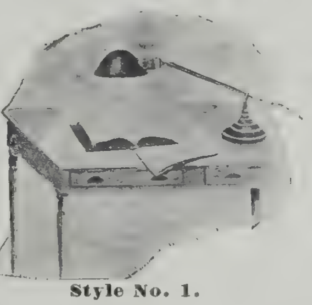

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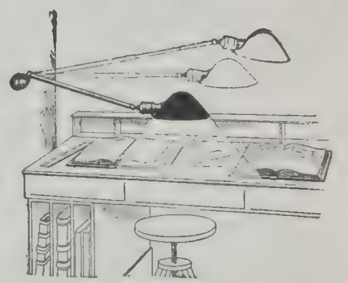

Style No. 290.

By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

WRITE FOR CATALOGUE AND DISCOUNTS.

WARREN BALL-BEARING FIXTURE CO., 4 WEST 15th STREET, NEW YORK, N. Y., U. S. A.

LITTLE'S WONDERFUL COBWEB CARBON PAPERS.

This product is unique in Carbon papers; its discovery an accident; its success immediate. For a long time after its first advent, the tissue paper upon which the carbon is made could not be procured. The mill declared it impossible to duplicate the shipment. The lot previously made was an accident. They had exhausted every facility of their plant to fill the order, with no avail. It looked as though the Cobweb was forever lost. Urged by Mr. Little, continuous experiment was made and finally the net result of a former accident was secured and the stenographic profession permanently enriched by the only carbon paper made that would produce from sixteen to thirty clean, clear-cut impressions at one writing. All machine company's tests for "largest number of copies" use Little's Cobweb Carbon Paper. It is very thin, extremely fervent, does not smut and will not deteriorate, under any ordinary circumstances, in any climate. *Age improves it.* Used and recommended for taking six to sixteen duplicate copies. Made in the usual colors.

Send for Catalogue. Orders received through New York commission house at export rates.

A. P. LITTLE, Manufacturer Standard Typewriter Supplies, **Rochester, N.Y., U. S. A.**

A City Without Horses.

AT the automobile exhibitions held in New York last month an unprecedented number of sales was made. It is reported on good authority that nearly $12,000,000 worth of motor vehicles were ordered, an amount likely to tax the facilities of the various manufactories for months to come. In view of this extraordinary sale of automobiles there naturally arises the question, Are we not rapidly tending toward the horseless age, at least in our large cities? To the most casual observer it cannot but be apparent that if the use of automobiles increases for the next decade at the present rate the horse will be practically eliminated from the city street.

When the horseless carriage first came about many were of the opinion that its use was only a fad, which would soon die out. No person would be rash enough to make that prediction now. It has rapidly passed beyond the stage of being a pleasure vehicle or a "millionaire's toy," and has entered the realm of the practical and the necessary. Very rapidly the motor wagon is being brought into use for express delivery and trucking purposes in all the large cities, and it bids fair within a short time to monopolize these fields, in which the horse has heretofore been supreme.

Putting aside all sentiment regarding the noble animal, so long the faithful servant of human kind, it would be a great improvement, so far as city affairs are concerned, if the horse were entirely banished from the streets. Think of the care and trouble the animal makes. His sharp-shod hoofs fill the asphalt pavement with dents, and together with the iron-tired wagon which he usually draws, render constant repair necessary. In a horseless city the stone paving, noisy and unsightly, would be dispensed with, the work of the street cleaning department would be largely wiped out and the municipal budget shorn of one of its chief items. In the matter of healthfulness and cleanliness the automobile would certainly be far superior to the horse. The horseless city will, doubtless, be quite as free from accidents and danger to human life and limb. It is admitted that at present automobiles are the cause of many distressing casualties. These, as time wears on, will surely be fewer in number, for the reason that stricter laws will be made and those laws be more rigidly enforced and also because there will be improved safety appliances and a more intelligent management than at the present. Let us then look forward hopefully to the era of the horseless city, which shall be cleaner, purer, less noisy and safer for the abode of man.

Trade Conditions in China.

UNITED STATES CONSUL ANDERSON, at Hangchau, China, who has made a study of the existing conditions and wants of the Chinese people and trade, reports that without question there is a growing demand for foreign-made goods in that country, but very seldom will the Chinese consumers discriminate between American and other foreign goods. The merchants who handle such goods may know where they come from, but the mass of their customers know nothing of this. They select the goods which best suit them at the prices which they can afford to pay.

It is not to be expected, therefore, that goods from the United States which do not meet the requirements of the trade will be accepted simply because of their origin. Standing on their merits they will have a free and fair field. While several localities in China may be influenced by particular nations, as a whole there is a fair show for any nation having goods to sell.

The particular point to be remembered by American manufacturers is that there must be a cheap line of goods at low prices for purely Chinese consumption. Goods for the foreigners in China, whose trade is commencing to be of the most attractive sort, must be of high grade and compare favorably in quality and price with the best products of Europe, with which they are to compete.

American Shipbuilding.

SIR WILLIAM H. WHITE, K.C.B., is contributing a series of articles to the London *Times,* based upon his recent visit to the United States, giving a summarized statement of naval construction now in progress, and estimating the capabilities of the States for building ships of all classes, for war and for commerce. He points out that in all recent American ships electrical power exclusively is employed for loading and working heavy guns, hoisting ammunition, lifting boats and other auxiliary services. No hydraulic machinery is now used. Undoubtedly there is complete control, great rapidity in operation and many advantages in the leads and protection of wires. In addition, very elaborate arrangements are made for the transport and supply of ammunition, mechanical appliances being freely used. It is claimed that an adequate supply can be secured even with the most rapid rate of firing. Since the war with Spain great attention has been given to the improvement of naval gunnery, and good results have been obtained both as regards accuracy and rapidity.

Quick Work in Shipping Goods.—During the four days that the North German Lloyd steamer Hanover was in port at Galveston, Tex., she discharged 6,000 bags of cement, 3,104 crates of empty bottles, 1,200 sacks of sugar, rice and seed and 464 casks and other packages of general merchandise. Her outward cargo comprised 13,400 square bales of cotton, 2,300 round bales of cotton and 900 tons of meal. In other words, this vessel unloaded enough goods to fill twenty average-sized freight trains and took on at the same time enough outbound goods to load twenty more trains, in all over 500 carloads.

Building Operations in New York.

FEW who have read of the activity of building operations in the city of New York are able to form a fair idea of their extent and importance. A five or six story building now scarcely attracts attention, and what was a quarter of a century ago an imposing business structure or hotel is now regarded as out of date and only suited to a city of the second or third class. Much of the building, and certainly most of the money invested in structures other than the twenty to thirty story business edifices, has been in the erection of hotels. During the last five years $57,000,000 were put into hotel buildings in New York City. This is only the cost of the buildings. The furnishings would run up into the millions in addition. In 1902 forty-eight hotels were put up in New York City at a cost of $21,259,000, while in the same year 226 apartment houses and apartment hotels built for occupancy by New Yorkers cost $13,463,500, and the 370 erected last year cost only $4,681,300 more than the hotels of the previous year. And now it is announced that a hotel to cost upward of $2,000,000 is to be erected in the extreme southern end of the city to face Battery Park and the harbor, a section that has been given up to business purposes exclusively for several generations, the trend of social and hotel life having been steadily to the north.

Another notable building scheme is of a philanthropic character, which means the expenditure of a large sum for the erection of model tenements for the working people of New York. To the fund for this purpose Henry Phipps has contributed $1,000,000. The model houses are to be erected and managed on a business basis, the earnings to accumulate and be used in erecting more buildings. The tenements will be what might be named "eclectic homes"—the best points of all plans being embraced, and so far as possible every defect eliminated. Spacious playgrounds for the children will be provided with each one; perfect sanitation and ventilation will be sought, and the best ideas of construction will be incorporated.

American-Style Shoes in France.

THE Hon. Benjamin H. Ridgely, United States Consul at Nantes, France, reports that shoes closely resembling in form and style those made in the United States are now manufactured in France, and the clumsy, ungainly and heavy French shapes are gradually disappearing. In their stead are coming gracefully cut and finely finished shoes of such a decided American appearance that one would think our exporters had begun to take possession of the market. The fact is, however, that it is rather our shoemaking machines than the shoes themselves that have come to France. In any event, the American-appearing shoes which are now quite generally seen in this city and elsewhere in the provinces are made principally in Paris with machinery imported from the United States, and I am informed that several great shoe manufacturers there have installed American machinery. This does not alter the fact that some bona-fide American shoes are on sale here, but they are much dearer than the French-made articles, and it is not likely that they will make headway against the strong combination which is represented by cheap French labor and prolific American machinery.

To Transmit Light Waves by Electricity.

IT is claimed that a genius in Chicago, Ill., has solved the problem of transmitting light waves by electricity. The apparatus, which he claims to have perfected, after four years of study and experimentation, will reproduce a scene at the farther end of the wire and the distance from one to the other end is said to be immaterial; a conversation carried on over a wire, as now by telephone, would be as though the persons at either end were near together and the facial expressions of the speaker be scrutinized. The opera, the sermon, the theater can be reproduced in the home if the apparatus will do what the inventor claims. He has carried on experiments between different rooms in his own home, and is only waiting to get enough money to exploit and patent the device before it is placed on the market. Each detail of the apparatus has to be patented separately, and he is now seeking to secure the rights for his transmitter, that works without carbon.

American Machinery in France.—High tribute to the excellence of American machinery is paid by A. M. Thackera, United States Consul at Havre, France, in a recent report on the industries of Rennes, at which there is a consular agency under his jurisdiction. He says: "While there are boot and shoe manufactories in Rennes, the chief seat of this industry is located at Fougères, 26½ miles distant, where there are about thirty factories in which are employed annually 4,000 male and female operatives. American shoe machinery has been introduced in these establishments, and its use is gradually increasing. The region included in the consular agency being also devoted to agriculture, large numbers of American agricultural machines are in use."

Tree Telegraphy.—After months of careful experiment, Major George O. Squier, of the United States Signal Corps, has discovered that trees may be used to catch wireless telegraph messages, and to convey them to an observer standing on the ground. He has found that trees may serve the purpose of Marconi's metal feelers or antennæ, and that tree trunks, while serving as masts or towers, also serve as wires to bring electro-magnetic currents to earth. Major Squier's experiments were all conducted with a view to facilitating army operations in the field by means of a system of tree telegraphy, and his efforts seem to have been entirely successful.

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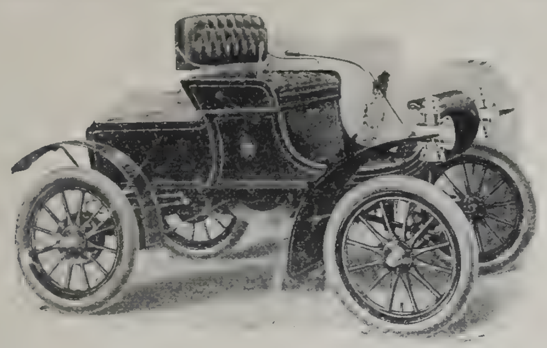

THE BEST LINE OF LIGHT CARS EVER PLACED ON THE MARKET

OLDSMOBILE Standard Runabout
OLDSMOBILE Light Tonneau Car
OLDSMOBILE Touring Runabout
OLDSMOBILE 20-h.p. 2-Cylinder Touring Car
OLDSMOBILE 10-h.p. Light Delivery Car
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The only cars of their class to receive Gold Medal at the Louisiana Purchase Exposition at St. Louis

Full particulars and specifications sent on request.

OLDS MOTOR WORKS, Detroit, Mich., U. S. A.

Member of the Association of Licensed Automobile Manufacturers.

WHITE STEAM CARS

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GRAND PRIZE

ST. LOUIS EXPOSITION

SIMPLE
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RELIABLE
DURABLE

EASY TO RUN
EASY TO CARE FOR

Send for Particulars, Post Free

WHITE SEWING MACHINE COMPANY CLEVELAND, OHIO, U.S.A.

The Silver Manufacturing Co.

373 Broadway, Salem, Ohio, U. S. A.

MANUFACTURERS OF

"Dole" and "Silver" Hub Boxing Machines.
"Star" Hollow Angers, "Dole and Deming."
Spoke Tenon Machines, "Silver's" Band Saws.
Portable Forges, "Silver's" and "Advance."
Blacksmiths' Drills, Hand or Power.
19-inch Post Drills and 20-inch Base Drills, Tuyere Irons, etc.
Wagner Sausage Stuffers.
Plain Screw Lard Presses.
Ham Preserving Pumps.
"Ohio" Hand and Power Feed Cutters.
"Ohio" Self-Feed Ensilage Cutters and Blower Elevators.
Metal Bucket Chain Elevators and Root Cutters.

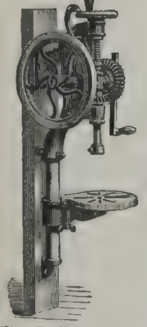


Fig. 742. No. 12.

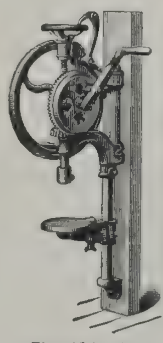


Fig. 731. No. 1.

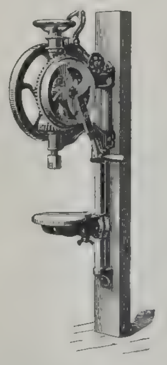


Fig. 732. No. 2.

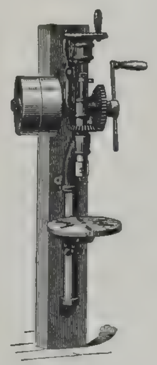


Fig. 746. No. 12

Four Leading Sizes of Blacksmiths' Drills.

WE HAVE 10 OTHER SIZES.

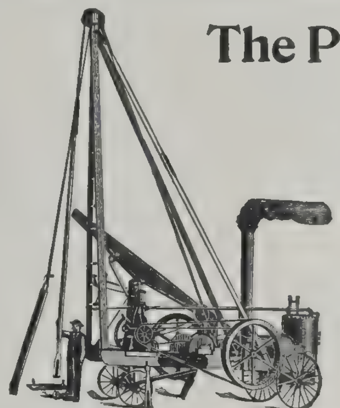
They are reliably constructed, light-running and work perfectly.

CATALOGUES IN ENGLISH AND SPANISH.

Test Your Land

FOR OIL OR GAS.

There may be a fortune under your feet. Why not develop it.



The Portable
STAR...
Drilling Machines

are suitable for Oil, Gas, Water and Mineral Prospect Wells.

Every machine is complete in all its details, with patent spudding attachment which requires no changes to operate it; sand pump, smithing tools, drill and sand pump ropes, etc., etc.

Absolutely without Springs.

These machines are the best in the world for drilling purposes, as they are complete in every particular. They are made in a series of ten different sizes to

Drill from 250 to 2500 Feet in Depth.

Send for our illustrated catalogue.

STAR DRILLING MACHINE CO.
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Use "A-B-C Code, 4th Edition," or "Universal Code of Lieber."

Breeding Pearl Oysters.

EXPERIMENTS now being made in the artificial breeding of pearl oysters have already yielded such results as to indicate that, by the adoption of suitable measures, the pearl fisheries of the Gulf of California, which were the richest in the world a couple of centuries ago, can be restored. They have been well-nigh ruined by reckless overfishing, but it is not yet too late, and, inasmuch as the gem-bearing bivalve concerned can be propagated as easily as the ordinary oyster, there is no reason why the once-productive beds should not be made again to yield an immense annual income.

The ingenious Japanese have shown the way. In their country the Bay of Ago, a long and narrow reach of calm water, has afforded considerable supplies of pearls for centuries past. The fishery having become to some extent depleted, artificial propagation was tried, and in fifteen years the production has been augmented nearly twentyfold. The method adopted consisted in fastening bundles of small tree branches on the bottom at the spawning season, so that the baby mollusks, which are free swimmers, might attach themselves. Later on it was easy enough to break the brushwood into pieces, when the oysters were as big as one's thumbnail, and to plant them in beds.

Similar methods are being tried in the Gulf of California, where at the present time pearl fishing is conducted on scientific principles. The whole fishery is leased by the Mexican Government to a San Francisco company, which employs about 400 men. The headquarters of the industry is at La Paz, and five large schooners are continually engaged in distributing diving gangs over the wide area worked, in supplying them with provisions and other necessaries, and in transporting the ever-accumulating heaps of pearl shells to storehouses in this town.

The divers are established in camps along shore, each gang being provided with a rubber suit and glass-fronted helmet, as well as an air-pumping machine, the latter being mounted in a large barge-like boat. Each day the boat is rowed from the camp to the scene of operations. Seven men are needed for each outfit. One of them, clad in the rubber suit, does the diving. Another tends to the signal rope, a third hoists and empties the basket of oysters as fast as the diver fills it; two more turn the cranks of the air-pump, and the remaining two are at the cars, keeping the boat over the diver as he wanders about on the bottom in search of the bivalves.

Provided with unlimited fresh air through a rubber tube, the pearl-hunter of the Gulf of California can take his time and select at leisure the oysters which look most promising. Though the light is dim and greenish, it is bright enough at a depth of 70 feet to enable him to see what he is about. The mollusks he seeks are always edge up, and usually in groups. To cut them away from the rocks by severing the "byssus" by which each is fastened is easy enough. Then he puts them into his wire basket and they are hauled to the surface.

The oysters are taken ashore and are opened under careful inspection by officers of the company, the final process being to squeeze the meat in the fist, lest, perchance, it hold a gem. It is all a gamble; sometimes a day's work will not yield a single pearl of size, and then, again, several fine ones may be obtained with a few shells. Most of those found are small, imperfect, and of not much value. On the other hand, in 1882 one lucky diver secured two pearls of 31 and 45 carats, respectively, which sold for $11,500, and in the following year a light-brown specimen turned up of 65 carats, which fetched $8,000. In the same year Pable Hidalgo, a small merchant of La Paz, bought from an Indian for $10 a pearl about the size and shape of a pigeon's egg, of a light sandy color, and surprisingly lustrous, which he disposed of later for $5,500.

Among the most curious and valuable of pearls, though rare, are those obtained from the abalone, or "ear-shell," which is a mollusk peculiar to the Pacific Coast. They are of peacock hue, like the shells themselves, which, notwithstanding their great brilliancy and variegation of color, have never been utilized for any commercial purpose until recently. Now, however, they are being employed in the manufacture of certain kinds of jewelry, considerable quantities of which were sold at the St. Louis World's Fair.

Not long ago a Frenchman named Bouchon-Brandely found that very beautiful artificial pearls could be made by boring holes with a gimlet through the shell of the living pearl oyster and introducing through the perforations little balls of glass. The holes were stopped with corks and at the end of four weeks (the mollusks being kept in an aquarium) the balls were covered with a thin layer of pearly stuff.

In six months the layer had become of sufficient thickness to be permanent, and the pearls thus produced were quite as beautiful as natural ones. Inasmuch as the pearls derived from the pearl oyster are white, gray or black, according to the part of the shell where the grain of sand or other nucleus happens to lodge, it ought to be practicable to determine in advance the hue of the artificial pearl by selecting the spot for boring the hole and introducing the glass ball.—*From the St. Louis Globe-Democrat.*

Building Baggage Cars of Steel.—An advance in the construction of railroad cars for baggage is signalized by the action of the Erie Railroad, one of the principal roads of the United States, which is installing in its service cars made of steel. It is the intention of the company to replace all the old baggage cars of wood attached to passenger trains with steel cars. Besides being non-collapsible, the cars are equipped with two sliding steel doors on each side, permitting the simultaneous reception and discharge of baggage. Should the air-brakes become disarranged the brakes are set by means of a wheel at each end of the cars. The illumination is by gas.

American Automatic Loom in England.

IN a recent issue of the London *Pall Mall Gazette* there appeared a long article entitled "The Americanization of the British Cotton Industry," from which we make the following excerpts: "But by far the most important matter, so far as machinery and industrial methods are concerned, which confronts Lancashire is the introduction and the future of the automatic self-feeding loom. When the fame of the Northrop loom spread across the Atlantic some people began to think that the plain Lancashire loom had had its day, and was fit only for the scrap heap. The advent, however, of the Northrop and similar machines led to a moderation of these views, and experiment has shown that, though in the manufacture of the commoner cloths the automatic loom is a pronounced success, it is in many respects in no way superior to the ordinary type, which, apart from this, has the merit of being much the cheaper of the two. Moreover, the old loom is being improved by two or three valuable inventions. * * * But there is likely to be much trouble before that change is effected, for the operatives are very strongly opposed to it. They are convinced that any system or any invention which will enable a weaver to attend to an increased number of looms will have the effect of throwing a considerable proportion of the whole body of operatives out of work. And at present—whatever may be the case in the future—this undoubtedly would be the case, for there is not enough cotton to supply all the cotton manufacturing machinery. A good weaver can look after four power looms, but he could also attend to the proper working of ten or twelve Northrops, and, therefore, we see that if a firm did away with the power loom and put the Northrop in its place fully 50 per cent. of the weavers would have to be discharged, unless, of course, an increased number of looms were laid down. But if there is not enough raw material for present purposes, what is the use of extending sheds or building new mills? This is a point which has been much discussed in Lancashire during the last three or four years. * * * Orders are plentiful at present; every spindle and every loom in Lancashire should work full time throughout the winter; the difficulty will be to get hold of the raw material. When British colonies and dependencies send some millions of bales of cotton to Lancashire every year, then operatives need not fear being without work. Meanwhile, however, the thought of idleness and starvation for many, consequent upon the introduction of labor-saving machinery, is never far from their minds, and they act accordingly."

Monster Ships for the Pacific Trade.

A MATTER of absorbing interest to the people of the northern Pacific Coast has been the construction of the monster of the sea, the Minnesota, which is to ply between Puget Sound and Asia. The Minnesota is some feet shorter than the Cedric and the Celtic—those 700-foot monsters which we of the Atlantic coast are accustomed to speak of as the biggest in the world—but the Minnesota is 7 feet deeper. Then, too, the internal economy of the Minnesota makes it bigger. In the matter of cargo capacity—the actual carrying of bales and boxes and bags and barrels, nothing like the Minnesota and its twin ever was built before. The Cedric can carry 18,500 tons, and is considered huge; the Minnesota can carry 28,000 tons. In its enormous hold can be stowed 280,000 barrels of flour, as much as can be brought by 100 freight trains of twenty-five cars each, or a single train seven miles long. Its cargo capacity is one-third greater than that of any other ship afloat, and six times the capacity of any other ship in the Pacific Ocean.

The rapid increase of our trade with Japan and China, the increase with the former of 1,500 per cent. in twenty years, has caused those who would benefit from further expansion to be prepared, and this is why two of the largest steamships have been constructed, one now on her first voyage with an immense cargo. The expansion of American trade with the Far East is expected to be from the Pacific Coast, and those who expect to benefit by this increase are making efforts in the same line as have the builders of the Minnesota.

Inventions of the Imagination.

EVERY reader of the public press has read of the wonderful achievements of Nikola Tesla, and naturally every reader in every country is interested in the man and his work. In the career of this man we see exemplified the effect of the overworked physical system and of the overwrought brain, for surely Tesla has suffered mentally and physically to a greater degree than he is probably willing to acknowledge. His latest assertions of what he has and expects to accomplish sound as the vagaries of a diseased brain. One of his latest predictions of what he will soon give the world is in the words following: "Let us suppose I have my plant at Niagara and you are running a sugar factory in Australia; by my discoveries it will be possible to send you 100, 500 or 1,000 horse-power for your factory, and to supply the same regularly by the force furnished from Niagara Falls." And other predictions of what he proposed to place before the world, notably "a transmitter which will emit a wave complex of a total maximum activity of 10,000,000 horse-power," are evidences that Mr. Tesla is in a serious condition mentally, which those who have read of his wonderful achievements in the past will learn with sincere regret.

American Carriages in Malta.—American-built carriages seem to be growing in popular favor in Malta, according to a recent report by the United States Consul at Valetta, the capital of the island. Within the last two years quite a number have been imported, either by the direct line from New York or by way of English branch houses. Such good satisfaction have these given that to-day an American carriage is considered to be unsurpassable.

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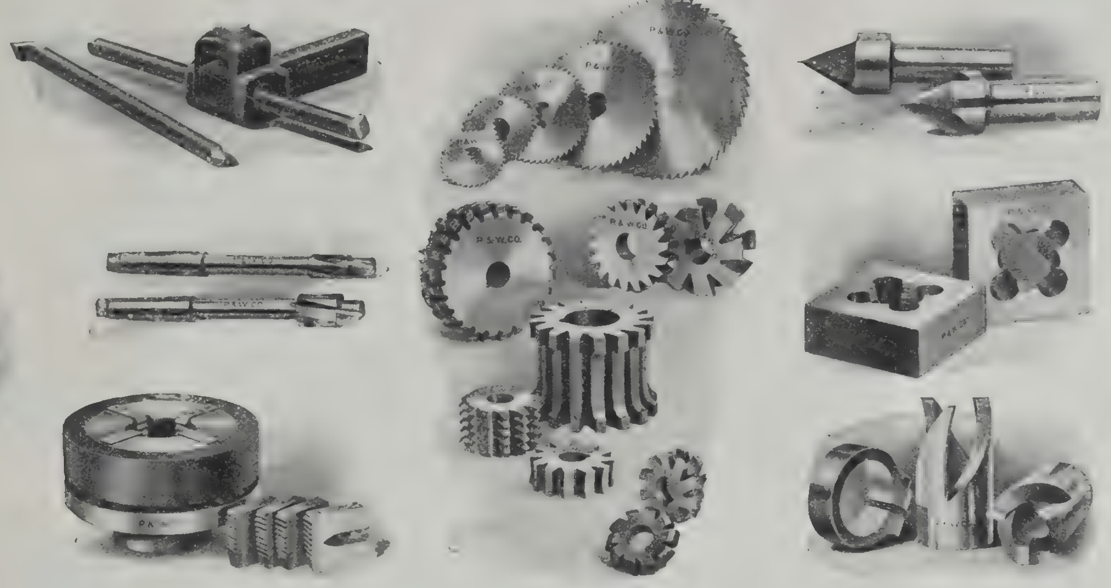

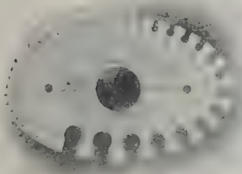

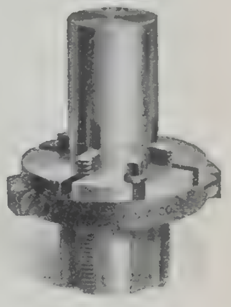

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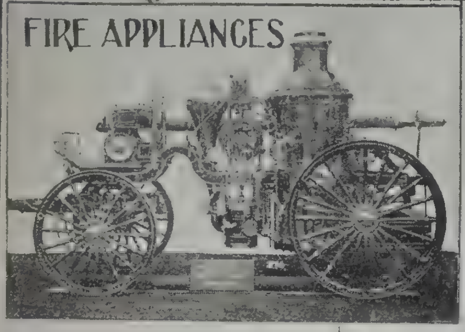

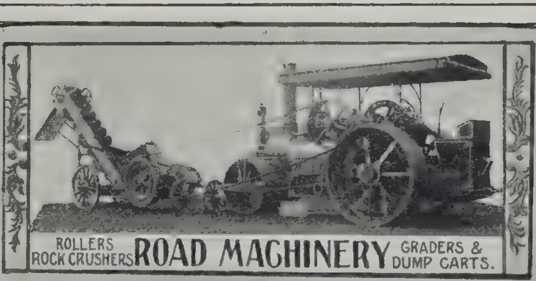

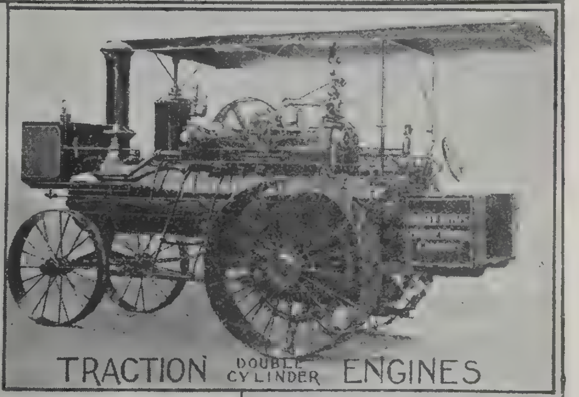

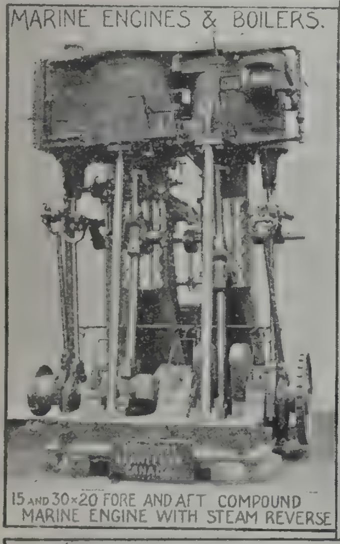
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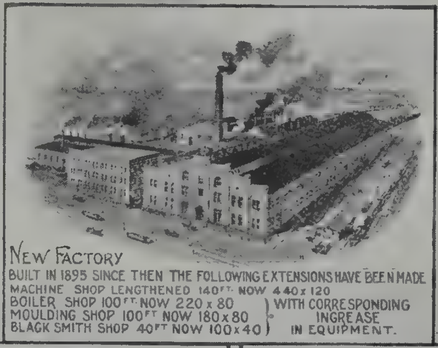

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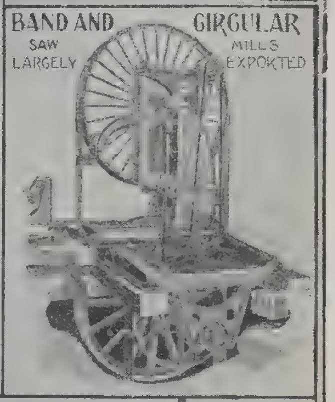

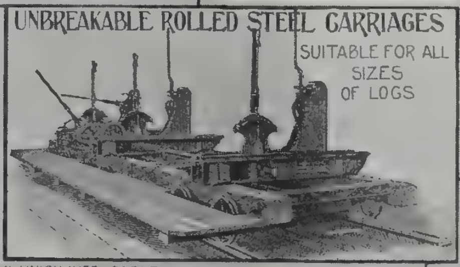
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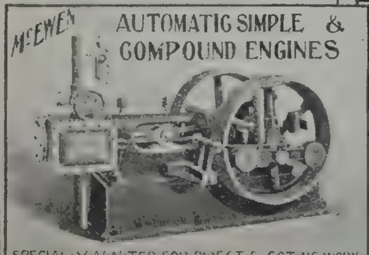
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World's Supply of Furs.

VERY few people except those connected with the fur trade, have any notion of the enormous destruction of fur-bearing animals, or of the extraordinary continuation of supply. According to a report published in the *Forest and Stream,* there are only a few species which seem to be verging toward extinction; such are the sea otter, the beaver over large tracts of country, certain sorts of fur seals and a West African monkey. Northern Asia and northern North America still produce vast quantities of fur, and will long continue to do so.

Perhaps the most valuable fur in the world is that of the sea otter, formerly abundant on the shores of the Pacific Ocean in northern Asia and North America, but now in great danger of extermination, unless it shall soon be efficiently protected. It is not unusual for a sea otter skin to sell for $500, while remarkably good skins may bring two, three or five times that price.

The only skin which approaches the sea otter in value is that of the black or silver fox. It is said that good skins of the black fox have been sold in St. Petersburg at from $1,500 to $4,000. A pair of silver skins in London sold for $2,400, while a single skin is said to have brought $1,000.

The Arctic foxes, known as white fox and blue fox, are in great demand. In 1903 Lampson & Co. sold more than 20,000 white skins and nearly 3,700 blue ones. Both these skins seem to be increasing in value. It is not long ago since the price of white foxskins ranged from $1 to $4. They are now said to be worth from $16 to $25, while the price of the blue foxskins runs from $50 to $75.

Almost 50,000 wolverine skins were sold in London last year at prices ranging from $4 to $8 for good skins. Of Russian sable nearly 30,000 were sold, or three times as many as were sold in all London in 1891. These expensive furs run from $2.50 to $75 in price, but occasionally skins are found which bring from $250 to $350 each. The Siberian sable, which is much more abundant, more than 470,000 skins having been sold last year, is an inexpensive fur, worth only about 50 cents apiece.

Mink and marten are cheap furs, and bring low prices, but the best pine marten bring from $7.50 to $12.50.

Otter skins again are costly, as are beaver, the supply of which, as has been said, seems to be failing.

Passing over a multitude of smaller and less well-known skins, it is to be noted that in the March sale of 1903 no less than 403 musk oxskins were sold, as against practically none at previous sales. These are valuable for robes, but the surprising increase in the number leads one to imagine that there is great danger of the extermination of this ancient species.

The Alaska seal catch last year was small, only 13,000 skins, against 19,000 in 1903. The skins taken at the Commander Islands appear to have been lost by the foundering of the ship that was bringing them. There are a multitude of other pelts used for different purposes, but hardly known to most readers, of which we need not speak further than to say that last year nearly 1,000,000 skunk skins were sold at prices ranging from 25 cents to $1.75.

Growth of the Telephone.

THE United States Census Bureau has published a series of reports on the generation and utilization of the electric current, the latest of these concerning telephones and telegraphs. From this it appears that although the commercial telephone has developed entirely during the past thirty years it is now of vastly greater importance than the telegraph. The extension of the long-distance service, the introduction of the commercial systems into rural districts, the establishment of independent rural lines, the development of such lines, in some instances, into mutual systems with an exchange and more extensive service, and the rapidly increasing use of the telephone in private dwellings, all point to a growth of the industry that can hardly be realized.

At the census of 1880 the telephone industry was in embryo, few commercial companies being in operation prior to that year. The number of miles of wire in use in 1902 was 141 times, and the number of telephones nearly 43 times as great as in 1880. In 1880 the population of the United States was 50,155,783 and the number of telephones of all kinds was 54,319, giving an average of 923 persons per telephone; the population of continental United States in 1902 is estimated at 78,576,436, and the number of telephones operated in that year was 2,315,297, giving an average of 34 persons per telephone.

The total revenue of all telephone systems, from operation and all other sources, amounted to $86,825,536, or an average of $37.50 per telephone. Of this amount 94 per cent. was derived from actual operation. The total operating expenses amounted to $56,867,062, or $24.56 per telephone; the total net income was $21,660,765, or $9.36 per telephone, and the net surplus for the year was $6,678,046, or $2.88 per telephone.

Gasoline Engines for Plowing.—Steam plows are, of course, familiar to all the readers of The American Exporter, but even the perfected American steam plow is not always suitable for the conditions under which it is desired to use mechanical power for plowing. Many of the objections to the steam plow have been overcome by an American firm of manufacturers, which has produced a gasoline engine which it declares is applicable to plowing. The machine in question is a gasoline traction engine, and it is alleged that one man with it can plow from 15 to 25 acres a day, and that the expense of maintenance is less than that of horses.

Compressed Air for Power.

AN air-compressing plant on the Quinebaug River, about two miles north of Norwich, Conn., has been in operation for some time and has demonstrated its efficiency and reliability. The air is used in the cylinders of many steam engines, and in small units is said to be economical, while in larger units it is more expensive than steam. About 1,000 horsepower is developed at the compressing plant, and the air is conveyed three miles to Norwich, where it is delivered to consumers at a pressure of 88 pounds. The plan consists of a shaft sunk in the Quinebaug River below the falls with 21 feet head, the shaft being 208 feet deep and 24 feet in diameter, with a bell-shaped chamber at the bottom with a maximum diameter of 52 feet. An inner shell 14 feet in diameter at the center of the hole is the downflow pipe. The water, pouring down this hole at great pressure, takes with it large quantities of air in the form of bubbles, compressing it as it falls, and at the bottom a separator removes the air from the water and it is stored for delivery to the mains. The loss of pressure in transmission is two pounds. The air is dry and quite suitable for power, as compared with air from a mechanical compressor. The compressed air is introduced to the engine cylinder exactly as if it were steam, and it is possible to use the engine with steam one day and compressed air the next, which is necessary at times of low water, the compressor, of course, being as dependent upon the power of the water as a turbine wheel.

The compressed air is sold at prices varying from $40 to $50 a horse-power per year. In small units this cost compares favorably with steam. In figuring costs, however, it is necessary to take into account the cost of heating the air. To pass it through a heater adds to its efficiency and it is desirable at all seasons. In the cold months it is absolutely necessary, because the chilled air entering the engine cylinder interferes with the lubrication of the engine parts. As compared with electricity, compressed air is the cheaper, but electricity offers other advantages. Where conditions are favorable for the establishment of plants to supply compressed air it will doubtless prove an economical and satisfactory source of power, and its conduct to manufacturing plants remote from the compressors has been found feasible, though to what distance it can be delivered at low cost has not been determined.

Gold Dredging in California.

A SUBJECT of great interest to the mining industry of to-day is that of gold dredging. A mining engineer of prominence, in a recent article in the *Mining Magazine,* of New York, discusses this subject with a view to calling the attention of both engineers and investors to its great importance. The writer says that although successful dredging in the United States dates back no further than eight years, there were many abortive attempts before that time. There are over seventy dredges now operating in the United States, and many others in Mexico, Siberia, Colombia, Brazil, Peru, Dutch Guiana, the West Coast of Africa, Terra del Fuego, British Columbia, Alaska, Servia, etc.

With reference to results to be obtained in the Oroville field, in California, by use of the dredge, he estimates the average value of the entire field at 15 cents per cubic yard, and says that it contains some 5,000 acres entirely suitable for successful dredging. Much of this ground was, and is, useless for agricultural purposes, and before the advent of dredging was sold as low as $25 an acre, whereas it is now selling as high as $1,000 an acre. In one case $3,000 an acre was paid. The owner is now netting over $6,000 an acre, and with one dredge handles more than twelve acres per annum.

There are tracts now being dredged, not worth $10 per acre as agricultural lands, which are returning over $8,000 an acre. In the 5,000 acres near Oroville there are probably $30,000,000 of bullion. Without going into mathematics it can readily be seen that the returns from the fruit or agricultural industry in this dredging area would require to be capitalized many years before reaching this amount.

Manufacture of Mohairs in America.

THE high standard obtained by American breeders and the facilities of improved machinery have enabled the manufacturers to overtake their rivals and to divide the trade. As the industry is yet young and sections of this country are perfectly adapted to raising Angoras, it is only a question of time when America will become the great center of the world for Angora goats and mohair products.

The most important use is in making plushes that cover the seats in railway passenger coaches, omnibuses, plush chairs and the like. The Interstate Commerce Commission some time since estimated that over 300,000 yards of mohair were used annually this way, and conservative authorities believe the amount has nearly doubled. The same quality of mohair is used in making the highest grades of carriage robes, couch-covers and sofa-pillow covers. The coloring is generally put in by hand after the article is made, and as the mohair takes dyes readily and holds them always many beautiful effects are obtained.

The lower grades of mohair are utilized in making carpets and rugs, which are unsurpassed in beauty and durability. The higher grades are utilized in making very beautiful cloths, called "brilliantine," "Sicilian" and "mohair crépon." The highest grade of brilliantine called "tramise," made of mohair, is rich, soft and pliable, and is so much like silk that at a short distance it is difficult to distinguish between them.

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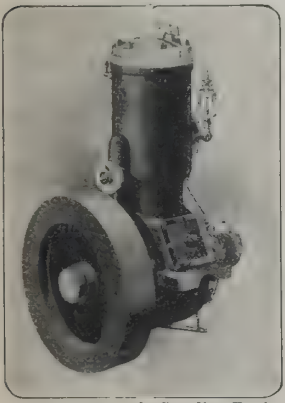

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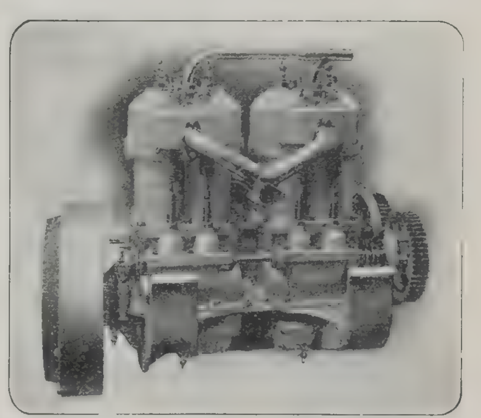

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Electric Magnets to Handle Iron and Steel.

ONE of the most interesting of recent developments in the iron and steel industry, says the *American Inventor,* is the application of electro-magnets to the lifting and handling of steel and iron products. Suspended from the hook of a crane, an electro-magnet, energized by an electric current led to it through a flexible wire, picks up a bulky iron plate of eighteen or twenty times its own weight, upon merely being brought in contact with it, with the same ease that a toy magnet in the hands of a child attracts and picks up a handful of tacks. Where the lifting magnet is employed the cumbersome chains commonly used to attach to the crane hook work to be removed are done away with, and so is the crane man's gang of assistants on the ground, the duties of whom are to pry up the work and attach the chains. All that is necessary is for the crane-driver to close a switch, completing an electric circuit in which the magnet is placed, lower the magnet into contact with the article to be moved, hoist and away. The article is dropped instantly by opening the switch. Time and labor are thus saved, and with no loss of safety or efficiency.

The design of the magnets used differs with the type of service to which they are to be subjected. It has been found, for example, that a magnet capable of lifting a 10,000-pound ingot could not grip 500 pounds of thin plate. The most general type, perhaps, is the simple horseshoe, one arm of which is prolonged to form an envelope for the rest. For plate handling a group of rectangular poles has been found to be most efficient.

Anything magnetic can be handled, but iron and its products naturally furnish the lifting magnet its best field. Pig iron, plates, ingots, slabs, blooms, structural shapes and unwieldy castings are all taken with facility.

An interesting feature of plate handling is that a number of plates in a pile may often be lifted at once and dropped one at a time in the proper locations. This is accomplished by a properly timed opening and quick closing of the magnet-controlling switch.

Another noteworthy application of the lifting magnet is the handling of hot material. The temperature at which iron loses its magnetism is about 1,300 degrees Fahrenheit, the second critical point of the cooling curve of iron, which is easily seen to be so elevated as not to interfere with the usefulness of the magnet. By the use of the latter a vast amount of discomfort is spared the men, who would otherwise have to bend over and chain up to the crane a red-hot casting, for example.

In practice a number of magnets, controlled by the one switch, are used for the handling of bulky articles. In this way plates of over 40 feet in length and 8 or 10 feet in width are lifted by two, three or four magnets. Tests of the power consumed by magnets give very satisfactory results. In one test a horseshoe type of magnet weighing 1,235 pounds lifted 12 tons—that is, about nineteen times its own weight. It was supplied with current of 13 amperes at 250 volts, or a power of 3,250 watts. A rectangular magnet weighing only 300 pounds and having a pole piece of 5 inches cross-section by 3½ inches long lifted a weight of 4 tons. This was with a current consumption of 4 amperes at a pressure of 230 volts, or an expenditure of 920 watts power.

By the use of lifting magnets the capacity of a crane is materially increased, as the time consumed in "roping up" work to a crane hook is quite a fraction of the time of each job. In a busy, crowded shop this means a good deal. As a precautionary measure, a second wire is usually run from the generator to the magnet.

Postal Package Service.

CONSUL THACKARA reports from Havre that the French postal authorities have made an agreement with the Compagnie Générale Transatlantique and the American Express Company, according to the terms of which packages can be forwarded from France, including Corsica and Algeria, by the steamers of the French line to New York and delivered at certain points in the United States by the American Express Company. The new service commences on November 1st. Packages will be received at all French railroad stations, post-offices and other postal package offices, including those of Corsica and Algeria. In general terms the conditions are as follows: The maximum length of package is 23.6 inches. Exception is made of those containing canes, umbrellas, charts or other merchandise which cannot be folded; the length in such cases cannot exceed 41.73 inches. Packages must not weigh more than 11.02 pounds. They are divided into categories according to their weights. (1) Those weighing up to 3 pounds; (2) those weighing from 3 to 6.6 pounds; (3) those weighing from 6.6 to 11.02 pounds.

The rates for packages originating in France are: (1) If the destination is New York City, Brooklyn, Jersey City and Hoboken, up to 3 pounds, 38.6 cents; 3 to 6 pounds, 62.7 cents, and 6 to 11.02 pounds, 80 cents. (2) For all other destinations, up to 3 pounds, 72 1/3 cents; 3 to 6 pounds, 96½ cents, and 6 to 11.02 pounds, $1.14.

For unwieldy or bulky merchandise, such as that mentioned above, canes, umbrellas, charts, etc., exceeding 23.6 inches in length, but not over 41.73 inches, or that which is fragile or cannot be easily stowed with other packages, or that which requires special care, such as plants or shrubs in baskets, cages containing live animals, velocipedes, baby carriages, etc., the rates are increased 50 per cent. In addition, all packages are subject to a charge of 48 cents for the custom-house formalities in the United States, whether the merchandise is subject to duty or not.—*Bradstreets.*

A Subway to Transport Coal.

THE requirements of coal to keep the subway system in operation is at the present time fully 600 tons per day and naturally this must be supplied regularly and continuously as storage room for a month's requirements would be out of the question. It was therefore necessary that means be devised to insure a steady stream of coal from the barges at the wharf on the Hudson River to the power plant. The contingency of the river freezing over to prevent a supply coming to be unloaded is one so remote that it was scarcely given a thought. The power house of the subway system contains nine ponderous engines, each of them as high as a two-and-one-half story house, and these, as before stated, require the combustion of 600 tons of coal per day. When the plant is developing power to its full requirements, a thousand tons will be thrown into the glowing mouths of the furnaces in the same space of time. It is readily understood, therefore, that the economical transportation of this large amount of material from the river side to the power plant is an important problem. The supply of coal at the subway power house is enough to last about three days. In order to keep ahead of the demands of the ravenous furnaces, it is necessary to unload at least one 800-ton barge each day.

The problem, however, has been solved and the system of transferring the coal from the barges in the river to the bins in the top of the power house over the boilers, a subway being part of the scheme, while the movement is mainly automatic, manual labor being almost entirely dispensed with.

By means of a series of leather belts thirty inches wide, the coal is carried a distance of 1,300 feet, part of the way in a subway, and is elevated 100 feet to the bins, in the space of three and a half minutes. In the course of this time it is also weighed. Two men on the wharf operating electric controllers similar to those on the platforms of the surface trolley cars raise the coal from the boat and empty it into a hopper. Through large-holed sieves it is deposited on a leather belt, sides upcurved like a hammock. From this it is dropped into a second hopper. This rests on a series of levers. The exit is closed. The hopper gradually fills until the scales in an adjoining room away from the coal dust indicates that two tons have poured into it. A man manipulates the lever in an adjoining room by which the gate of the full pocket is opened and the moving coal turns into a second hopper. In an instant down below, as when a dam is opened, the crest of the coal wave appears moving along on the curved leather belt. Through the subway faster than a man can walk it moves toward the power house, more than a block away. It soon reaches that point, and in a little cascade rattles into a small hopper. Through this it pours into a third belt and begins its climb to the bins at the top of the building. From there other belts carry it along to different points and drop it to the bins as required. From the bins to the boiler-room floor the journey is made through a tube.

Money in Low-Eared Corn.

IT is estimated that the corn-raisers of the State of Iowa, U. S. A., were last year benefited to the extent of $30,000,000 because of the propagation of a variety of corn with low-growing ears. The person to whom is due the honor of benefiting "the man with the hoe" is a professor in the Iowa Agricultural College. He is an observant man, and in traveling about the State saw that one great drawback in corn-raising was the liability of the crop to be blown down and ruined by high winds. The professor decided what Iowa needed was corn with ears growing close to the ground. He experimented until he found a kind that answered that demand. Then he traveled through the State, addressing the farmers from the rear platform of his car and distributing seed. It is expected that the year 1905 will witness still greater results from low-eared corn.

The professor to whom are attributed such wonderful results became an agronomist accidentally, as it were. Years ago, while a teacher in Michigan, he got up a corn-growing contest among his pupils. He induced the boys to pick out the earliest, biggest and most perfect ears from the fields, save them and plant from them the best and most perfect kernels. The result, aided by scientific methods of cultivation, was that the boys raised more corn on their little patches than anybody had ever dreamed of.

Professor Holden worked on his system until it was perfected. His fame spread, and by and by a firm owning a 25,000-acre farm in Illinois offered him a big salary to run it. He planted 20,000 acres of corn for them, and added to their yield more than 100,000 bushels the first year. The Government of Iowa engaged him to occupy the chair of agronomy in the State Agricultural College. Iowa farmers at first laughed at the professor and ridiculed his attempts to teach them—the best corn-growers in the world—anything about corn-raising. Their laughing ceased long ago.

The results are read in the crop reports on Iowa's corn yield. The average crop of Iowa corn for 1904 is 40 bushels to the acre. For nine years previous it had been 27½ bushels. Last year's crop aggregated 350,000,000 bushels, about 125,000,000 more than in 1903.

A New Export Article.—Fish spawn from American hatcheries is now being shipped to all parts of the world. Last month a large quantity of trout eggs was shipped from the Government hatchery at Duluth to the Argentine Republic. Last year Lake Superior trout eggs were shipped to South America to stock certain streams of the Andes. The undertaking proved a great success, and the waters which were stocked now abound with young trout which have attained a growth of some 4 inches in length.

Quality and Price

are the first considerations when making a purchase.

Both these essentials are contained in the

Schroeder

1904 MODEL

Roller Gearing, Rotary Washer.

Lightest to Operate. Best Construction.

Furnished with detachable legs for export. We also manufacture the **"B.B."** and **"Brammer" Rotaries,** also several styles of Lever Washers—round or square. Write us for further particulars

BENBOW-BRAMMER MFG. CO.,

The Pioneer Washing Machine Manufacturers,

St. Louis, Mo., U. S. A.

J. G. BLOUNT CO.,

EVERETT, MASS., U. S. A.

Manufacturers and Exporters of the

BLOUNT GRINDERS.

IMPROVED PATTERNS, NEW DESIGNS, MATERIAL AND WORKMANSHIP FIRST-CLASS.

Arbors ground and run in self-oiling bearings. 6-inch to 24-inch wheels.

Orders filled through commission houses. Correspondence solicited. Illustrated Catalogue "B" on application.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the

WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from **Louisiana** and **Mississippi Red Cypress,** which is less susceptible to expansion and contraction caused by hot or cold water **than any other timber known. Our hinges are put on with bolts instead of screws,** and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2⅜ turns of the fly-wheel to one turn and return of the dasher. **The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.**

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** ($30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements; 18x24x24 inches.

WHITE LILY WASHER CO.,

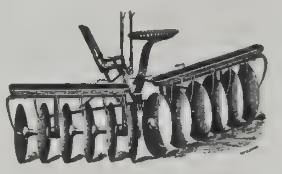
MANUFACTURERS,

DAVENPORT, IOWA, U. S. A.

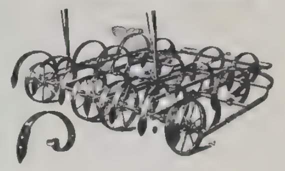
RODERICK LEAN

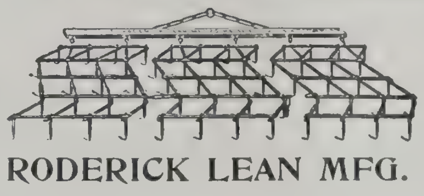
FARM IMPLEMENTS

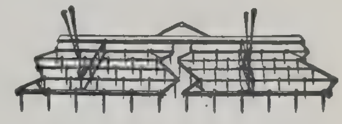
"In Use Wherever the Sun Shines."



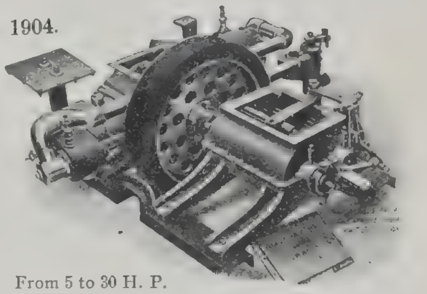
Variety of kinds suited to the requirements of any country Correspondence solicited. Catalogues furnished in English, German and Spanish.







RODERICK LEAN MFG. CO., Mansfield, Ohio, U. S. A.



From 5 to 30 H. P.

Dorchester, Mass., Sept. 24, 1904.

THE BRENNAN MOTOR CO.,
Syracuse, N. Y., U. S. A.

Gentlemen:—The 14 h.-p. motor which we purchased of you last January we have in a car that weighs 1,850 lbs. Car has been driven 4,000 miles and the motor has given excellent results and drives the car 40 miles an hour. We made the run from Syracuse to Utica, 52 miles, in 2 hours and 20 minutes. Total time from Syracuse to Albany, 150 miles, 8 hours; time from Boston to Syracuse, 352 miles, 20 hours. The car weighed, with two passengers and luggage, 2,350 lbs. (about 1,070 kilos.). We also wish to say that after using several makes of carburetors that we obtained the best results with your make of carburetor.

Yours truly, (Name supplied on application.)

Address

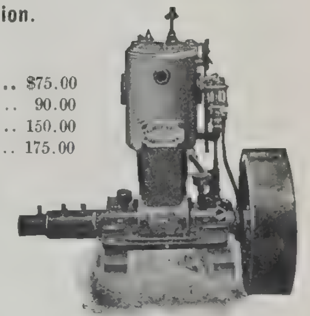
BRENNAN MOTOR CO., Syracuse, N.Y., U. S. A.

Manufacturers of

Standard Gasoline Motors for Automobiles, Boats and for Stationary Use.

Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.



PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	$75.00
3 " " " "	90.00
5 " " " "	150.00
7 " " " "	175.00

Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

Send for Catalogue.

PALMER BROS.

COS COB, CONN., U. S. A.

The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes **Juliennes** ten times as fast as by the ordinary method and is the only utensil that will produce **Lattice Potatoes.** Is extremely simple to operate and sells rapidly wherever shown.

16\frac{50}{100}$ **Upon receipt of SIXTEEN and 50-100 DOLLARS in U. S. Gold or its equivalent,** we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] **No. 6 X SLICERS, for Export only.** Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

HANDY THINGS CO.,

Manufacturers,

LUDINGTON, 40 to 50 Rowe Street, MICHIGAN, U. S. A.

The Copper Mines of America.

SO much has been printed of late about investments in copper stocks, much of a sensational and exaggerated character, that naturally a short sketch of the characteristic features of the principal copper mining towns and their inhabitants will prove of interest to readers in every section, for the discussion has extended to nearly all countries, and the farther removed the greater the desire shown to know more of the localities where the wealth is found which has made the stupendous undertakings possible and has given rise to the inflated corporations that have been the subject of the sensational disclosures.

The first great copper mining center of the world is at Butte City, Montana, the next at the extreme northwest corner of the upper peninsula of Michigan, on the narrow neck of land jutting into Lake Superior, and the other in Arizona. The Butte City is a most wonderful mining camp. The town lies in a mountain basin scooped from the lofty slopes of the Rocky Mountains, the elevation being upward of a mile. This basin is a vast reservoir of copper and silver veins. Since the first important discoveries there, some forty years ago, half a billion dollars worth of mineral—copper, silver and gold—have been taken from the mines. It is said that not one of the 13,000 miners in Butte earns less than $3.50 a day. All spend their earnings recklessly. Drill drivers in flannel shirts bet stacks of silver and gold slugs. When friends disagree as to the price of a newly discovered claim they flip a $20 gold piece into the air and decide a $10,000 difference on the turn of the coin. In one year Butte's mineral output was fifty-five millions, nearly three times the entire mineral product of the State of California. A single company took out $23,000,000 in one year and its 6,000 men received $600,000 in wages a month. So it is easy to understand why men of nerve and women of accomplishments have come to Butte from Paris and London, from South Africa and Australia, from St. Petersburg and New York, to breathe the life and splendor of that coruscating city perched on a shelf of the Rocky Mountains.

Butte is probably the most up-to-date of cities, and in closer touch with New York and the great interests of the country than any other town in the West. The people are wide awake and can size a man up at a glance. Real men are accepted at full par value in the mines and in the best society. Young men from our foremost colleges at work in the mines or smelters are welcomed everywhere. You see them with battered hands and powder-stained faces at receptions and soirées, ranking with the highest. The young college man, but an hour before in overalls, plays Chopin and Schumann at the grand piano.

The copper mining region in the State of Michigan, on Lake Superior, differs in many respects from the foregoing. It may be described as having a radius of twelve miles with the village of Calumet as a center. Within that area are six other villages having a population of 50,000. Distribute one-third of this number under ground by means of several score of punctures to the bowels of the earth, the deepest of which is nearly a mile. Sprinkle over the surface of the circle about a score of mammoth buildings, within which the rhythmic rise and fall of ponderous "stamps" makes miniature earthquakes day and night. Take out of these holes a mass of greenish yellow metal, the sale of which has put into the pockets of men and women in forty-five years dividends amounting to $128,000,000. Distribute among the circle's population every week something like half a million dollars in wages and you get an idea of this peculiarly American copper mining region.

Isolated in large measure from the outside world, the community is well-nigh a community of interests. The treatment of employees by the great mining corporations here might well stand as a model. They regard both the laws of man and of God. Wages as high as is consistent with the economical management of property have always been paid, easy shifts of work maintained, while pretty and comfortable homes at ridiculously low rental have been built for employees. Not a mine in the copper country is operated on Sundays.

In the village of Calumet, the local headquarters of the great Calumet and Hecla mining corporation, conditions for its inhabitants are almost Utopian. The well-paved streets, the fine system of electric lights, and even the handsome and efficient public schools are maintained at the expense of the corporation. The pastor whose parish is located within this zone of copper finds his lines have fallen in pleasant places, for the large Cornish element in the population, including some of the wealthiest members of the community, is devoutly religious. Its libraries, schools and churches are as handsome architecturally, and as complete, as will be found in any community of its size East, West or South. It has a yacht club, possessed of a handsome home, which numbers among its distinguished honorary members President Roosevelt, King Edward VII—who, by the way, accepted the honor when he was the Prince of Wales—and Professor Agassiz. Scores of its leading citizens and mine officials are graduates of Eastern colleges.

The sole treasure of the copper country is its copper, and the heart of its people is single to that treasure. They mine copper, trade in copper, talk copper and dream of copper. But they are a cultured people and contented, and it affords them something amounting almost to exultation to know that whatever little discomforts and privations they may have to endure there, the world outside is indebted to them for its telegraph, telephone and trolley wires; for its kettles, saucepans and boilers and a thousand other things twentieth century civilization has made necessary.

Snow in the Streets of New York.

EVERY snowstorm that passes over the city of New York causes its inhabitants an expense which may range from $30,000 to $300,000. In the last twenty years New Yorkers have spent $5,000,000 simply in the removal of snow from the streets. For the year which has just ended more money was expended in this way than ever before in the city's history; for the bill for removing snow from the streets in 1904 amounted to $1,046,250. One storm alone in January entailed a cost of $340,000.

Although the removal of snow is necessary not only for the convenience of the public but also for the prevention of disease, it is, nevertheless, a task which leaves nothing to show for its cost. The only purpose of it all is simply to get the streets in as good shape as they were before. But were the snow left as it falls business would suffer to an extent which makes the expenditure for its removal seem an insignificant sum. There have been times when the snow blockade paralyzed all street traffic and pedestrians found it difficult to go even short distances. So the removal of snow is an absolute necessity, there being no means of overcoming the difficulties such as are common enough in cities where one snow-storm follows another without an attempt at disposing of the accumulation, nature being allowed to do this in its own time and manner.

Twenty years ago the annual snow bills averaged $20,000, ten years later they were $200,000, and now they have passed the million mark, or a fivefold increase every ten years. In the attempt to make the streets passable after the memorable blizzard of 1888, when twenty-one inches of snow fell, a depth not equalled by any storm since, the city paid only $25,000, or one-tenth what an ordinary storm now costs. All that the city in 1888 tried to do was to open alleyways through the snow to the ferry slips and up and down Broadway. In that blizzard winter 47.4 inches fell and 110,000 cubic yards were dumped into the rivers. Last year thirty-seven inches fell, and yet in the same territory 5,743,387 cubic yards were removed.

The system of payment for the removal of snow is to let out the contract to certain companies for the cleaning of certain streets for so much a square yard cleared. The whole city is mapped out and the area of each street known. The computation is based on the figures of the Weather Bureau. For example, if the Weather Bureau reports that there has been a fall of twelve inches of snow and the contractor clears 900,000 square yards of street, he is paid for 300,000 cubic yards of snow removed.

American Beef in England.

ACCORDING to a recent article in the London *Express,* the increasing influence of the large American meat firms at Smithfield Market is causing unrest among the salesmen. Formerly cattle, live or chilled, were sent over to be dealt with by Deptford and Smithfield salesmen, but now a few of the most important American firms—one of which controls as many as 600 businesses in England—have initiated a policy of killing, cutting up and selling their cattle in that country. With their stalls in the London markets, ready to take as many carcasses as may be forthcoming, the American firms have an advantage over outside slaughterers and salesmen. In fact, they have the beef market practically at their mercy.

"Take the American beef off the market," one of the principal Smithfield salesmen is quoted as saying, "and you would cause a famine. Quite 50 per cent. of the beef sold here is American." Of course, this is bad for the British farmer. For years past he has seen increasing quantities of American beef imported into England, and selling at a price which has made it not worth his while to breed cattle. Now he is thoroughly disheartened. He could produce equally good beef if he liked, but it does not pay, and so American beef is the mainstay.

The superintendent at Smithfield also stated what the *Express* says, that the policy of entire control now adopted by the big American firms has caused troublous times for some of the salesmen.

Gas and Electric Light Fixtures.

IN no line of useful wares entering into the furnishing and decorating of a house or building of any kind, says a recent writer in the *House Beautiful,* has greater or more rapid strides been made than in the designing and making of fixtures for gas and electric illumination. It is not many years since the introduction of quality, appropriateness of design and finish, rather than bulk or massiveness, became a feature of fixtures for illumination, and there has been a steady advance and development, so that to-day the gas and electric fixtures are as correct features in appropriateness and harmony of design as are the other interior fittings and furnishings. There is no exaggeration in the claim or statement that the fixture manufacturers of the United States to-day excel those of all other countries—in design, in finish and in features, both decorative and useful. Not only the fixtures must possess these truly artistic features and excellence of design and finish, but even the glassware accessories that are used with them, such as the globes, shades and imitation candles, must also possess the high qualities of harmonious design as do the fixtures on which they are to be used.

Now the glassware used with lighting fixtures must possess character and appropriateness, both as to shape of the globe itself as well as the decoration placed upon it, and be in harmony with the fixtures—just as the fixtures must partake of the architectural and decorative features of the interior where they are to be placed and used.

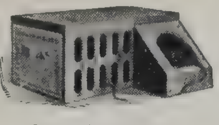
ANIMAL TRAP CO., ABINGDON ILLS., U. S. A.

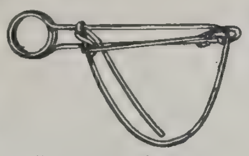
The Largest Manufacturers of

MOUSE, RAT AND GAME TRAPS IN THE WORLD.

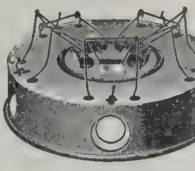
Particular attention given to export orders. Illustrated catalogue free, giving full particulars. Order through your Exporter.

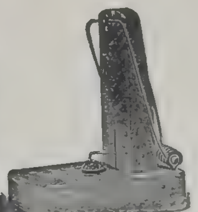
"Out o' Sight"
Mouse and Rat Trap,
also Imitations.


"Catch-'Em-Alive"
Mouse Trap.
Delusion Pattern.

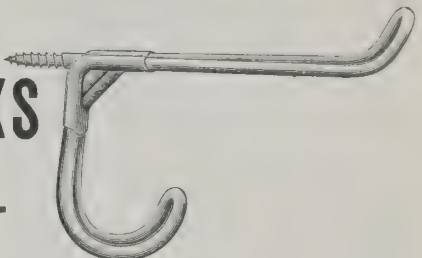

"Stop-Thief" Trap,
4 sizes.
For catching small fur-bearing animals.

Coxes'
Self-Setting Wood
Choker Mouse Trap.
1, 2 and 3 Hole, Square.
4, 5 and 6 Hole, Round.


Coxes'
5-Hole Metal Mouse Trap.
Extra heavy.
Well made.


Pennsylvania
Rat Trap.

BRADLEY
SHELF BRACKETS and COAT AND HAT HOOKS



ORDERS RECEIVED THROUGH EXPORT HOUSES.

SAMPLE ASSORTMENT OF BRACKETS COSTS ABOUT $15.00.

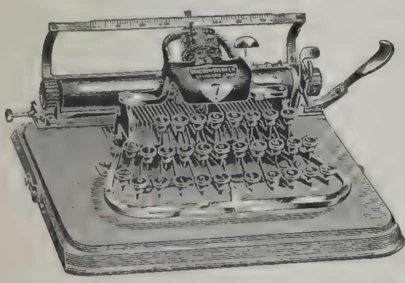
Weigh about 200 pounds. Measure 42 x 23 x 18 inches.

HOOKS, No. 15, JAPANNED, 12 gross in case. Weigh about 130 pounds. Measure 31 x 14 x 13 inches.

Order a "sample assortment" of Brackets and a case of Hooks.

ATLAS MANUFACTURING CO., NEW HAVEN, CONN., U. S. A.

The Blickensderfer Typewriter



Stands alone as the only high-grade typewriter sold at a low price. If you are interested in knowing why, we can tell you.

The Blickensderfer Mfg. Co.
644 Atlantic Street,
Stamford, Conn., U. S. A.

Aluminum Smokeless Oil Heaters

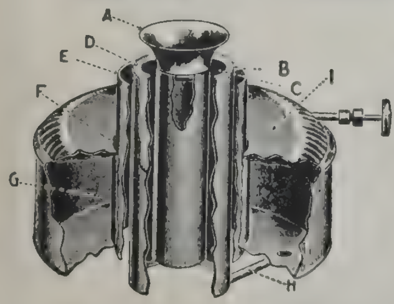
EQUIPPED WITH SAFETY BURNER.

No. 1—Brass burner; removable fount; 8-in. circular wick; height (bail down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular wick; height (bail down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (bail down), 28 inches.

SPECIAL $35.00 OFFER FOR FOREIGN MARKETS:

Upon receipt of $35.00 in U. S. gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29½.

OUR SAFETY BURNER. Note Construction.



- A—Flame spreader perfectly free from perforations.
- B—Air space outside of wick tube.
- C—Air space inside of wick tube.
- D—Wick.
- E—Outside casing to burner.
- F—Air space between fount and outer casing.
- G—Fount or receptacle for oil, entirely separate from burner.
- H—Feed pipe connecting oil from fount to burner.
- I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

Metal Stamping Co., Jackson, Mich., U. S. A.

BARBAROSSA
is the most exquisite Bottled Beer in the World

THE CHRISTIAN MOERLEIN BREWING CO.
CINCINNATI, O.
TRADE MARK
BARBAROSSA
CINCINNATI, U.S.A.

Moerlein's
Bottled Beers are the model for Purity and Healthfulness

THE
CHRISTIAN MOERLEIN BREWING Co
CINCINNATI, OHIO.

The American Merchant Marine.

WITH the change from wooden to iron and steel ships have come other changes, and if of less importance in themselves they at least have an equal influence in determining the prestige of the maritime powers in the economic transportation of freight, which means practical control of this important feature of modern commercial intercourse. A century ago our clipper ships were the equals of those of any nation, shipping at that time being one of our greatest national industries. Our virgin forests furnished excellent material for the construction of ships, at a price considerably below that at which similar material was obtainable in Europe. A large percentage of our early settlers were from the seaports of Europe, men for whom life upon the sea had a fascination which it is difficult to appreciate. Had these conditions continued our ocean-going merchant fleet would not have shrunken to its present proportions. The changes came at a time when our economic development was not ready for them. If the change from wood to iron and steel as the material for construction and from sail to steam as the power for propulsion, had been delayed until our mines and furnaces were as they are now the most productive and best equipped of any in the world, it would have given our merchant fleet a relative as well as positive advantage.

As to materials for construction, we are no longer at a disadvantage. Our production of pig iron and steel has, within the past decade, increased with such amazing rapidity that we now lead in the production of both. In respect to steel, we produce more than both of our two nearest competitors. Not only is our supply of iron ore far greater than that of any European country, but we have more coal with which to smelt it than any other country has, with the possible exception of China. Coke, which within the past decade has become by far the most important fuel for the smelting of iron ore, can be produced in this country at much less than the European cost.

With the steady tendency toward replacing sail by steam, the question of fuel supply becomes one of ever increasing importance; and, as coal is and for a long time will continue to be preeminently the fuel for the production of steam, the question of a country's coal supply is a vital one in an inquiry concerning its prospects as a competitor for the carrying trade of the world. In the production of coal we are now in the lead. Yet it is not the present output that is of the greatest significance, but rather the potential supply and the factors that determine price. While the 15,800 square miles of coal area of Great Britain, Germany, France, Belgium and Spain have practically all been laid under contribution, we have scarcely touched one-fourth of our 194,000 square miles of coal area.

Our shipbuilding plants within the past few years have increased in number and capacity with marvelous rapidity, so that we now have between three and four hundred shipyards, which will not, except in size, suffer by comparison with the best-equipped plants in other countries. Here, as in the steel mills, the application of labor-saving machinery in all departments has been developed to a point not yet reached in any of the shipyards of Europe. As to machines of great power the 150-ton revolving derrick "Hercules" at the Newport News yards is worthy of study. The yard is no doubt better equipped with steam and electrically operated cantilever cranes of the sort used in shipbuilding than is any other shipyard in the world. The "Atlas" at the Cramp yards is the largest and most powerful floating derrick in the world. In the matter of wages, the odds are at present against us. But this, while a factor of great importance, is, nevertheless, one of decreasing importance, for the reason that the crew, in relation to the tonnage of the ship, is decreasing in all countries, but more rapidly in the United States, because of the more rapidly increasing use of labor-saving machinery.

A strong evidence of the healthy growth of our shipbuilding industry is to be found in the increased size of the ships recently built. In 1901 we built sixteen ocean steel steamers, having a tonnage of 76,374; in 1903 we built eighteen having a tonnage of 101,471, an increase in size of 20 per cent. For our trade upon the Pacific we are rapidly turning out from American shipyards some of the largest vessels afloat. The Minnesota and Dakota have a tonnage of 21,000 each. Next below these are the sister ships, Manchuria and Mongolia, with a tonnage of 13,500 each; and a trifle smaller, the Siberia and Korea, sister ships, of 11,000 tons each. The Minnesota and Dakota have been built within the last three years. We are now building in all about 1,400 vessels a year, having a total tonnage of nearly 500,000.

It is interesting to note that the greatest percentage of increase in tonnage during the last ten years has been upon the Pacific, where tonnage has nearly doubled within the ten years.

Nurses in Schools.

A SYSTEM has been introduced by the boards of education of several American cities which must commend itself to our readers who have the welfare of children at heart, and it is expected that it will eventually be adopted in all large cities. It is the selection of trained nurses to visit the various classes at stated intervals to examine the children for the detection of any who may be afflicted with contagious diseases, and give simple treatment to others requiring such. In the city of New York, where this system has been in operation for several years, the result has been the exclusion of many children afflicted with contagious diseases who menaced the health of others, and the temporary relief of many needing prompt attention.

Lofty Buildings in a Great City.

MUCH has been written concerning the tall buildings, known as "skyscrapers," in American cities, but there is one structure of that kind now in process of erection in the city of New York which attracts unusual attention because of its curious character. It stands on a lot 42 feet wide, is twenty-one stories, or 296 feet, high and has a floor space of 242,088 feet.

When buildings were first constructed of steel they were regarded as marvels of the builders' art. These structures at that time spread more than they towered, so that the ground area of some of them was very great, but the upward tendency of the steel office buildings was not due so much to the ambition of the builder as to the business necessities of the owners and the great value of the ground.

It is estimated that the value of real estate in the city of New York increases at the rate of $100,000,000 per year, and there are practically no vacant lots available for business purposes remaining on the island. "Skyscrapers" are therefore built on the sites of old buildings which are now fast giving place to these lofty structures. In this way the floor area of the city is being increased far more rapidly than at any time since the ground was covered with the first building.

These lofty structures, according to architects, are far safer than the dwarfish, three and four storied, old brick buildings that they now overtower. To these men none of these buildings appear especially remarkable. None represents by any means the limit to their daring and skill. As one of them said: "If it were not for the law we could build them as tall as the Eiffel Tower, and that is 984 feet high, or a little more than 600 feet above the tallest skyscraper in New York."

Nor is this audacity confined alone to the architect who plans or the contractor "who takes the job." Every workman seems imbued with this same characteristic. The riveter may be seen climbing about the top of a steel structure some three hundred or more feet above the street as nimbly and with as much indifference as if he were within safe jumping distance of the ground. Now and then he will hang from that dizzy height with only a bolt-head under the toe of one foot, and the other leg twisted around the crosspiece. Now and then workmen may be seen traveling skyward astraddle of a beam, which is being hoisted by the derrick on top of the steel frame, and so unconcerned of danger that they light their pipes as they sail aloft.

American Saws Preferred.

IN a recent number of the New York *Sun* appeared an interesting article about saws, which goes to show that American-made saws are considered the best and are in demand in nearly all parts of the world. The following excerpts will prove of interest to our readers: The writer of the article, being attracted by a curious tool in a New York hardware dealer's shop-window, resembling a sicle with saw-teeth, instead of a cutting edge, questions the dealer and gets some interesting facts.

"That," said the dealer, in answer to an inquiry, "is what is called a California pruning saw, and it is sold almost wholly, if not altogether, on the Pacific Coast. The pruning saw commonly used in this country is a straight saw. It is in reality a Japanese pruning saw, made in this country. It was introduced in California by Japanese gardeners. This saw, besides its odd shape, has another peculiarity that perhaps you have not noticed. It cuts drawing toward you instead of pushing from you; and that is a characteristic of all the saws of Japan and China. Our saws, with the exception of the cross-cut saw, like those of Europe, are all made to cut as you push the saw from you, with the downward motion. The saws of Japan and China are all made to cut as you pull the saw back toward you, with the upward motion; exactly the reverse of ours."

In reply to a query as to whether any American saws are sold in Japan and China the dealer answered: "Yes, some, these being made, of course, to cut like those of their own make, with the upward stroke, but more of the foreign saws now imported into those countries come from Germany, the Germans making a cheaper saw than we do. But while the Germans are selling saws in China and Japan we are selling American saws in Germany in direct competition with saws of German make. Ours cost more than theirs, but they are better and do better work and are in every way more satisfactory. American saws are, in fact, now sold all over Europe and in other foreign countries as well, because like American-edged tools and American machine tools and American machinery generally they are the best in the world."

Blinders for the Typewriter.—A blinder on the typewriter is a scheme of an American inventor for making the operator entirely familiar with the keyboard, so that he will ultimately be enabled to do unlimited work without the necessity of giving the keyboard even a passing glance. In the education of the operator, as soon as the student has learned the respective location of the keys, the next step is to make him find his way over the keyboard without the use of his eyes, so far as watching the lettered disks in front of him may be concerned. The impulse for the eye to guide the fingers is very strong and it is a difficult matter to get the student to keep his eyes from the keyboard, and in order to prevent him from gluing his vision on the alphabet in front of him the blind has been devised. Such an attachment can be very conveniently fastened to the machine, and is effective in keeping the gaze from the keys. This character of work is known as "touch" typewriting, because the fingers are guided entirely by the sense of touch as they glide from one letter to another.

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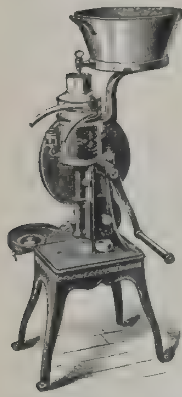

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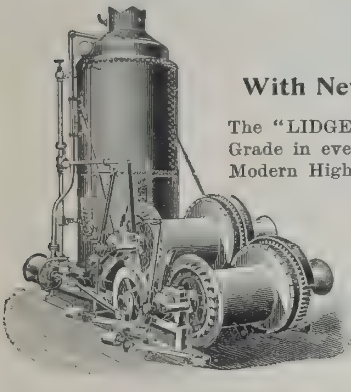

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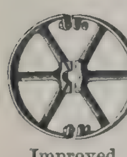

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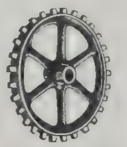

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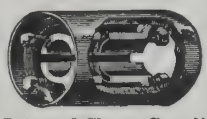

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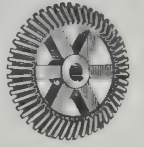

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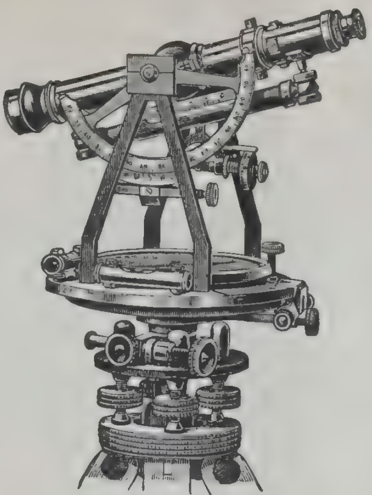

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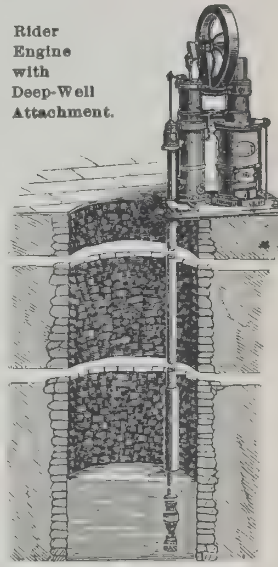

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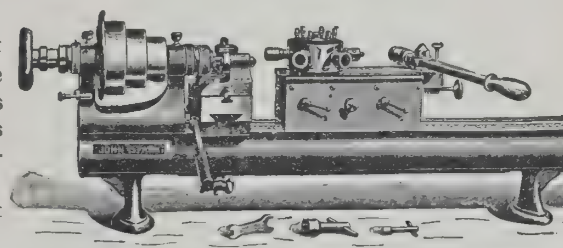

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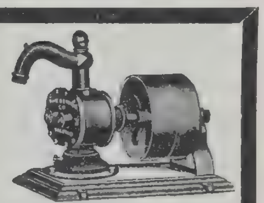

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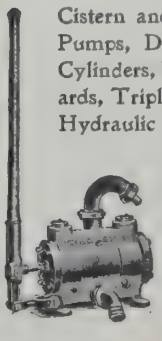

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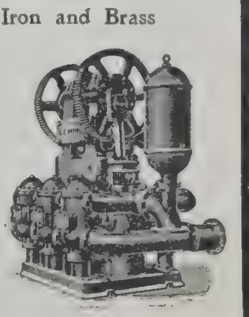

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Telephones in the United States.

A BULLETIN just issued by the Census Bureau tells a story of industrial development in America which is almost unique. It summarizes a report that is yet to appear relative to the telephones and telegraphs of the United States in the year 1902. The most fascinating and impressive revelations in this document, of course, are those which pertain to Bell's wonderful invention. They can be paralleled in American history only by the rapid growth and enormous utility of electric lighting and traction. Mr. Martin's statistics possess the greater value from the fact that no attention was given in the census of 1890 to the telephone. The situation in 1902, therefore, is compared with that in 1880. In the interval between those years the number of exchanges in this country increased from 348 to 10,361, or about thirtyfold! It is estimated that the number of talks by telephone in the year 1902 was more than five billion, such conversations being more numerous than the pieces of first-class matter sent through the United States mails.

Only a glance at the figures is needed to show how greatly the telephone now overcomes the telegraph. In the business which makes use of the one about $348,000,000 was invested in 1902, as compared with $163,000,000 devoted to the other. The telephone gave employment to 64,628 wage earners, and the telegraph to 26,978, though the disproportion between the total wages in the two industries was a trifle less obvious. The telephone had in service four times as many miles of wire as the telegraph, and carried fifty-six times as many messages. If the difference be so great at present, what will it be ten years hence? In the future the demand for telephones will probably not increase so rapidly as in the recent past, but for some time to come the telephone must gain in popularity faster than its rival.

Of the 5,000,000 miles of wire required for the telephones of this country, 97½ per cent. are operated by companies doing business for revenue only. Something like 1½ per cent. of the mileage is under the control of "mutual" organizations, which find exchanges desirable, but employ their wires for the convenience of the members and not to earn money. A third class of lines, nearly 5,000 in number and having an average length of ten miles, is owned by farmers, who dispense altogether with switchboard facilities. Not a few farms are reached by wires from city exchanges, but it has not been possible to obtain data concerning these.

The number of telephones in use in 1902 was 2,315,297, or about 1 to 34 of the total population. The average number of messages per telephone for the year was 2,190.

Great Demand for Steel.

EVERY mill and furnace in the Pittsburg district is being run at high pressure. It is reported that the United States Steel Corporation is seeking large quantities of iron for delivery each month until May. One estimate places the probable need of the Steel Corporation at 50,000 tons. The production of pig iron is enormous, and if continued during 1905, will cause a total output of 22,000,000 gross tons of pig iron.

The Bessemer Association has named $16 as the figure for future sales of pig iron at the furnaces. For small lots $16.25 is being obtained. Some time ago foundry iron was more active than Bessemer. It is just the reverse now. Foundry No. 2 is selling at $16 per ton, a drop from $18 in the past two months. The demand for all foundry irons is slow. With the advent of spring many jobs now held up will be started.

Leading steel producers here say that prices for finished products have reached the zenith for 1905. The capacity of the finishing mills is so enormous that orders are rapidly filled and order books cleared.

Producers of steel plates are getting premiums for prompt deliveries, especially from the car builders. The railroads of the country all seem to be placing orders at once, and the capacity of the car building plants is inadequate to fill the demand. The directors of one of the big car building plants recently met to decide whether the plant should be enlarged to meet the increased demand. It was their opinion that the demand for car building was only temporary. That after present orders are filled there will not be such a rush, and for several more years the present plants may be too large. It was decided to turn down the proposition to enlarge the plant and to turn down orders instead. The steel manufacturers, while loud in their praises of the business situation, want to see orders placed for a longer period before more money is invested in new machinery.

American Goods in Colombia.

COLOMBIA is fully aware of the superiority of American manufactures. One of the principal merchants of Quibdo, says the American consular agent there, was recently much incensed in having despatched to him by a New York mail-order house, tools with a German mark on them. He said that if he had wanted German goods he would have sent his order to Hamburg, and that buying from an American catalogue he naturally expected American make.

The American consul thinks that the election of General Reyes to the presidency will result in extending trade and developing new industries. In some parts of Colombia transportation facilities are not equal to commercial demands.

Band and Circular Saw Mills.

THERE appeared in THE AMERICAN EXPORTER for December an article on American saw mill machinery, in which the writer adverted to the capabilities of the band saw mill in terms that may have led some of our readers to believe that for cutting logs into lumber it is, under all conditions, to be preferred to the circular saw. Such, however, is not the case. Whether the one or the other should be preferred for the purpose depends upon the character of the logs and the situation and requirements of the mill. Each has its function to perform in the economies of the lumber-cutting industry. Where timber is scarce and the logs are large the band saw may be used advantageously. On the other hand, where the logs are not of extraordinary size and it is desirable to turn them into lumber as quickly as possible, the circular saw is generally employed. Although the circular cuts a wider kerf than does the band saw, the additional waste thus caused may be more than offset by savings effected in other ways. In the first place, a circular does not cost as much as a band saw mill of the same capacity, nor does it require such skilled labor to operate it, and in case of breakdowns is more easily and cheaply repaired.

Improvements have recently been made both in the manufacture and method of operating circular saws, for they are now hammered much thinner, and by being run with greater speed, made to stand up to their work equally well, thus cutting more lumber with less waste of material than formerly.

Each of these types of saws has its own field and function in lumber production, as we have already explained. Nowadays many saw mill manufacturers make both the circular and band outfits, and it is not uncommon to find mills in which are installed both types of machines, to be used as the exigencies of trade, time and place demand.

Railway Supplies for Russia and Japan.

AMERICAN manufacturers of railway equipment have recently booked heavy orders from the Russian Government. Following close upon the announcement that a Pittsburg company had booked an order for 90,000 tons of steel rails with the provision that they be delivered in Vladivostock in May, comes the report that an East St. Louis locomotive company has contracted to make and ship 100 locomotives for Russia before June 1st.

The American Bridge Company has already secured several large contracts in Asia and are figuring on more work, while the United States Steel Corporation will greatly increase its tonnage as a result of the war. More than $1,000,000 is to be expended in the erection of bridges in Manchuria, and most of the contracts are being placed in the United States as rapidly as plans can be completed.

With the domestic orders added to the export business, more than a million tons of rails are on the books of the United States Steel Corporation and it is predicted that the steel rail production of 1905 will break all records. The activity of the mills at the conclusion of the first month of the year certainly sustains that view of the situation.

Large Loans Quickly Made in New York.

THE New York *Commercial* says: There are three or four banks in New York, and quite as many trust companies, having resources enabling them to make single loans of $5,000,000, $10,000,000, or $15,000,000, without inconvenience. The vice-president of one of these banks said that he had seen occasions frequently when $5,000,000 was advanced at a moment's notice. He added that $20,000,000 could often be secured for a borrower by a little telephoning.

This is possible only, of course, during times of easy money, when the banks are not besieged by requests from other customers. The president of a bank that figures in every large loan increase has boasted that his institution belongs to an alliance which could command $75,000,000 or $100,000,000 ready cash if occasion required it. During periods of stringency, however, this same bank forces its customers to cut down their requirements to the lowest possible limit, so that the institution may have enough to meet all emergencies.

Running Trains by Telephone.—The Baltimore and Ohio Railroad Company, controlling one of the prominent trunk lines of transportation in the United States, is said to be the first steam railroad in the world to reduce the movements of trains by telephone to a system. As the result of a conference of the despatching force held recently at Baltimore, a set of rules and forms were arranged and it is the expectation that every non-telegraph station that has a passing siding will be directly fitted up with a telephone connection to the nearest telegraph office.

A Wireless Project.—The announcement is made that Pike's Peak, in Colorado, U. S. A., is to be made a wireless telegraph relay station for despatches from New York and other Eastern States to San Francisco. It is the purpose of the company in charge of the undertaking to flash messages from New York to St. Louis and Chicago, then to Kansas City, from there to Denver, from Denver to the top of Pike's Peak, from there to Salt Lake City, then on to San Francisco.

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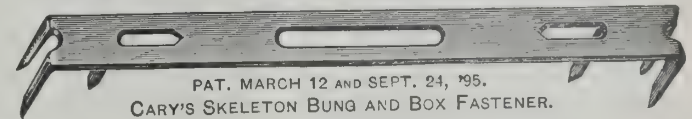
Made of soft steel through which nails can be easily driven.

Put up in coils of 300 feet and packed 20 coils in a case.

Made in four widths, viz.: ½, ⅝, ¾ and 1 inch.



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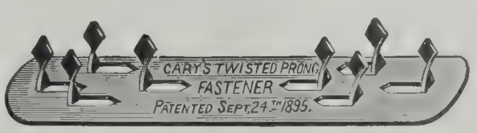

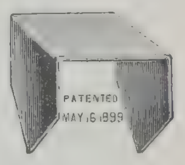

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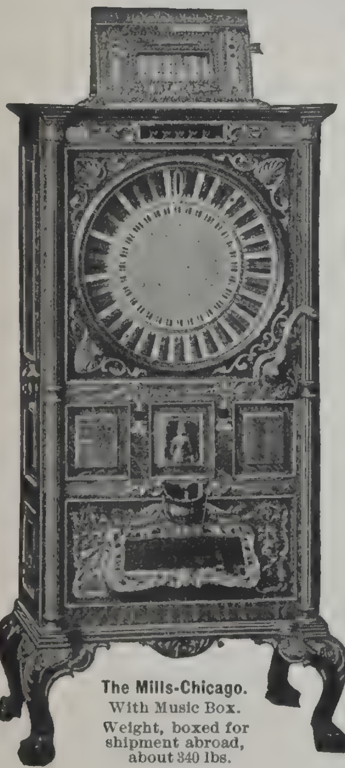

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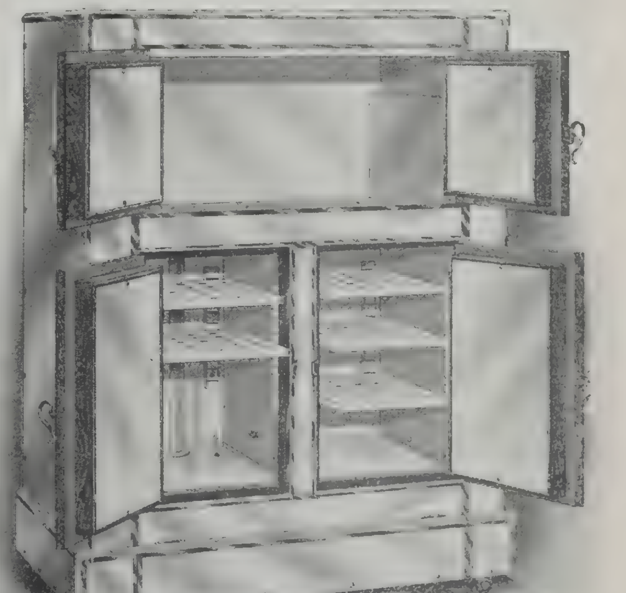

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A New Powerful Explosive.

LIKE an echo following the sensational statements recently spread broadcast regarding the reputed powers of the newly discovered gunpowder known as Shimoseite, with which the Japanese artillerists have been spreading havoc in the ranks of their Russian foes, there comes information regarding another explosive invented within the past few months by an American, for which is claimed greater force and more destructive violence than for the dreaded weapon of the Japanese. The name given to the new powder is "Mitchellite," after the name of its inventor, James C. Mitchell, of Reynolds, Ind., U. S. A., who made his first experiments during the latter part of last winter.

"Mitchellite" is in granulated form when ready for practical use. It has been tested in quarry blasting experiments, with results that are said to demonstrate considerably more force than dynamite, while the claim is also made that even the results shown by Shimoseite have been exceeded. The following description of experiments made will give an idea of what it is said to do:

Experiments with cartridges loaded with "Mitchellite" were also productive of interesting results. A bullet, covered with a steel jacket, was fired from a thirty-caliber Winchester rifle with thirty grains of the powder, and penetrated a half-inch steel plate placed at a distance of 40 yards. From a distance of 20 yards a bullet of the same make was sent through the thin part of a steel rail, approximately one-half inch. Another fired from a distance of 40 yards penetrated a live cottonwood tree 36 inches thick and sank 14 inches into a live sycamore standing 10 feet behind the other tree. A lead bullet fired from the same gun, out of a shell loaded with sixteen grains of "Mitchellite," at a target consisting of twenty-one pine boards, each 1 inch in thickness, penetrated seventeen of them, while a similar bullet fired from the same gun out of a factory shell loaded with twenty grains of smokeless powder, made its way through only six of the boards. At 100 yards a steel-coated bullet was driven through a 30-inch green oak tree, thirty grains of "Mitchellite" being used in a thirty-caliber rifle.

The powder can be fired under water as well as in the dry condition, as was demonstrated by exploding a quantity of it in a 2-inch hole, 7 feet in depth, containing 2 feet of water, the powder being allowed to show just above the surface of the water in order that a spark might be applied to the dry portion. The powder can also be loaded into shells in a wet condition without impairing its explosive power. It has been fired after lying under water for six weeks.—*The World To-Day.*

A Big Submarine Tunnel.

THERE was recently opened to the public in Boston, U. S. A., a link in the transportation facilities of that city which is as yet without a parallel in the United States. We refer to the submarine tunnel under the bay which connects the city proper with what is known as East Boston. There are similar tunnels in use in the United States, but they are not as extensive. Conduits dive under the main stream of the Chicago River and the South Branch at Chicago for the accommodation of street cars, but these hardly deserve consideration, because the portions which are under water hardly exceed 300 or 400 feet in length. A tunnel under the St. Clair, between Port Huron and Sarnia, U. S. A., was completed in 1890, but this is used by a trunk railway and was not designed for suburban traffic. The submarine section of the East Boston subway is 2,700 feet long. It will stand at the head of submarine construction in America until the completion of the East River tunnel at New York City, which will be half as long again, measuring 4,000 feet from shore to shore.

Trans-Continental Telephoning.

WHEN the long-distance telephone line, now in process of construction, to connect Denver with Omaha and Kansas City, in the United States, is completed, it will be possible for New York to talk with San Francisco and telephone users will be given intercommunication with over 2,000,000 subscribers. Wonderful strides have been made with "Bell's curious toy," which made its début in 1876 at the World's Fair in Philadelphia, until a capital of $1,000,000,000 is invested and a trans-continental service is soon to be realized in America. This trans-continental system is the realization of the implicit faith of the pioneers in the ultimate materialization of the carefully thought out plans of the inventor and his tireless partners, plans so broad in their comprehensive scope as to partake of the nature of a prophetic vision that one system of electric-speaking telephones would cover the continent, and that telephone service would modify or revolutionize prevailing methods in industry and commerce and prove an essential factor in business and social affairs.

A Big Bridge Contract.—The Pennsylvania Steel Company, one of the largest of its kind in the United States, has been awarded the contract for a huge bridge across the East River, New York City. This bridge will be the longest and heaviest to cross the river, being 10,270 feet long and 135 feet high, and the contract price aggregates $5,000,000. The width of the lower floor will be 90 feet, and the upper floor is to be 60 feet, with four trolley tracks and two elevated railroad tracks. The top of the towers above high water is to be 300 feet, the length of the river span is to be 1,182 feet, and the length of the bridge proper will be 3,720 feet.

Plows for the World.

THE United States exports annually nearly $23,000,000 worth of agricultural implements. Of this grand total, which represents farm tools and machinery of an almost endless variety, the plow manufacturers of America contribute an important proportion. With the usual readiness of the American manufacturer to adapt his outfit to meet the varying needs and demands of other countries, the plow-makers of the United States now turn out implements of a wide variety of styles and shapes to meet the requirements of all kinds of soils and the diverse methods of agriculture employed in Old World countries, as well as in South and Spanish America. At first thought it would seem that England ought to supply her colonies with farm tools, but one of the largest orders ever received for plows in this or any other country came from South Africa during the repatriation of the Boers. It was for 20,000 plows, and was promptly filled by a Pennsylvania firm, who having studied the subject, were prepared to furnish just the sort of implements suited to South African soils and style of farming. Australia is also a heavy buyer of American plows, and her demands for the past ten years have been steadily increasing. American plows are being used to overturn the sod of both Canada and Scotland.

Recently plows of American manufacture have found their way into Russia and are making great headway. Even Turkey, whose farmers have for ages stirred the soil with a pointed stick, is now demanding something better, and American manufacturers are supplying the demand. Spanish-American countries also extensively use plows made in the United States, a number of odd types having been made to meet their varying requirements. In Brazil, Chili and other South American countries the introduction of plows from the United States not long since has already developed a rapidly increasing demand.

Very few of the large gang plows, such as are used on the American Pacific slope and in some of the prairie States, are exported at present, but a demand for these is almost certain to come as foreign agriculturists expand their operations. For the present, however, most of the export trade in plows will be confined to the implements dawn by one or two animals.

World's Consumption of Iron.

IN the first centuries of the iron age, says N. S. Shaler in the *International Review*, the requisition was much less than a pound each year for each person. Four centuries ago it probably did not exceed, even in the most civilized countries ten pounds per capita each year. It appears to have been at something like that rate when the English colonies were founded in North America. At the present time in the United States it is at the average rate of about 400 pounds per annum for every man, woman and child in the land, and the demand is increasing with startling rapidity. It seems eminently probable that before the end of the present century, unless checked by a great advancement of cost, it will require a ton of iron each year to meet the progressive desires of this insatiable man.

When the American English colonies were founded coal had hardly begun to come into use in any country. It is doubtful if the output of the world amounted at that time to 100,000 tons—possibly to not more per capita of the folk in Europe than a pound, or about the same as iron at that late period in the so-called "iron age." At the present time the total production of Europe and North America amounts to an average of at least two tons per each unit of the population, and the increase goes on at a high ratio.

Petroleum, practically unknown to the Occidental peoples until about half a century ago, has with wonderful rapidity become a necessity to all civilized and many barbaric peoples; the increase in the rate of consumption is swifter than that of any other earth product.

A Monster Reservoir.

ON the first of the present month there was completed and put into service near Croton-on-the-Hudson, a few miles north of New York City, the largest piece of masonry in the world, with the single exception of the great Pyramid of Egypt. This gigantic structure of stone and cement is known as the Cornell Dam, and has been built to form a reservoir, being a part of New York's water supply system. It has been ten years in building. When the great flood-gates were closed and the water allowed to enter, the engineers in charge made the statement that it would require two years for the immense dam to fill. When the water reaches the base of its coping there will have been formed a lake about seventy miles in circumference. It is estimated that the dam will hold 30,000,000,000 gallons of water.

An Immense Wagon Plant.—The Studebaker Wagon Company, located at South Bend, Ind., U. S. A., has just built an addition to their large plant, covering ten acres of ground, for the exclusive manufacture of list and steel wagon skeins. This plant, said to be the largest of the kind in the world, is nearly half a mile from the vehicle manufactory proper. It has access to five lines of railway, thus affording excellent shipping facilities.

California Export Trade Expands.—A recent report on Pacific Coast trade shows a remarkable increase in ocean commerce from California during the year 1904. The total exports from the port of San Francisco for 1904 were $51,700,000, a total of $4,308,000 a month.

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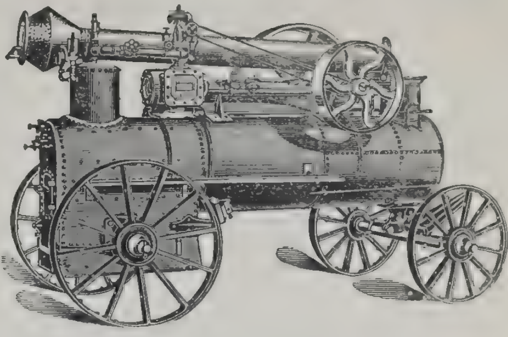

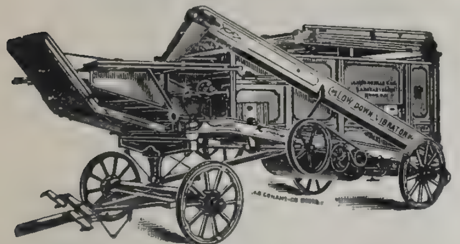

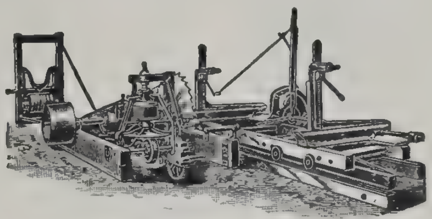

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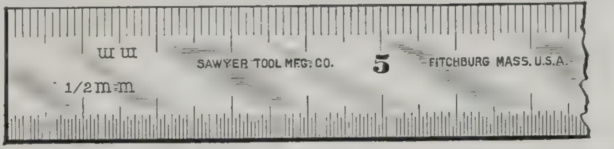

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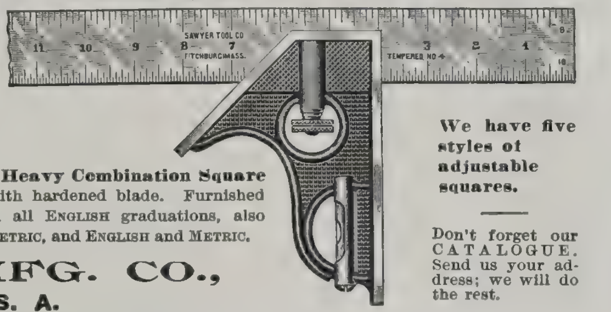

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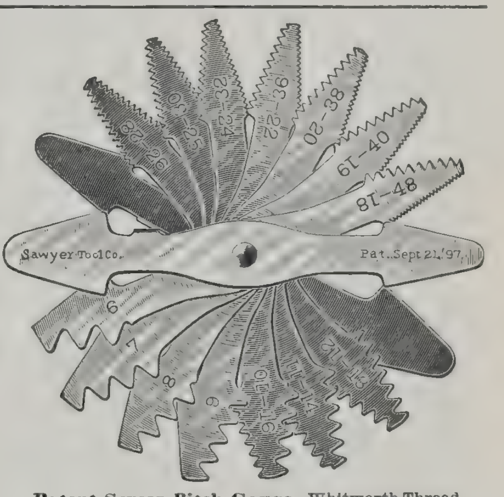
Sawyer Tool Co.
Pat. Sept 21, '97.

Patent Screw Pitch Gauge—Whitworth Thread.

This gauge has the blades pivoted in the middle with the pitches cut on the tapered edges of either end.

The shape of the blades of this gauge is such that they can be used in very small holes. It is compact and has the following pitches; 6, 7. 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 38, 40, 48.

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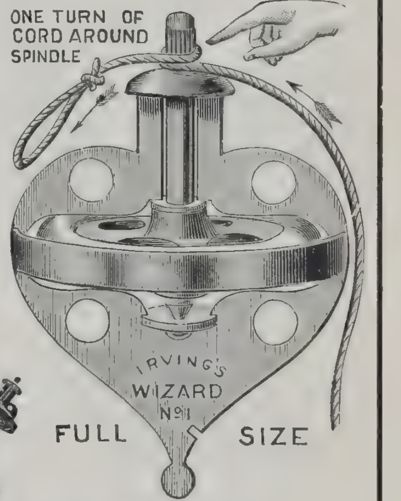
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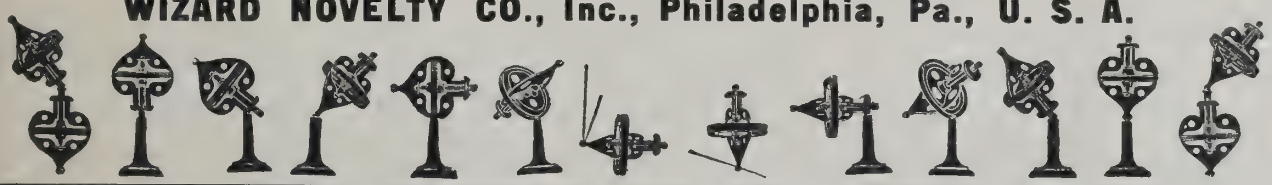

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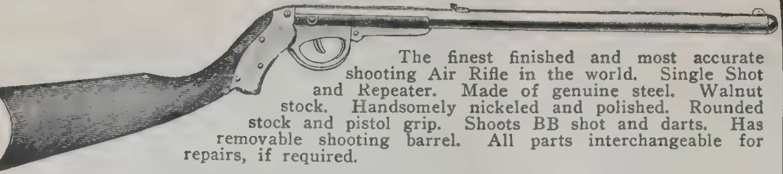

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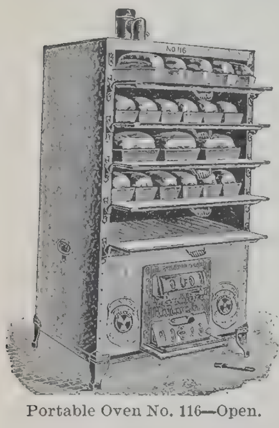

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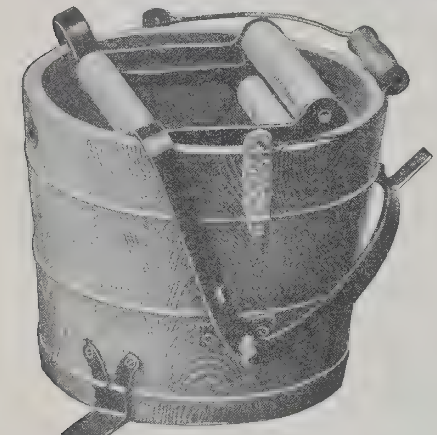

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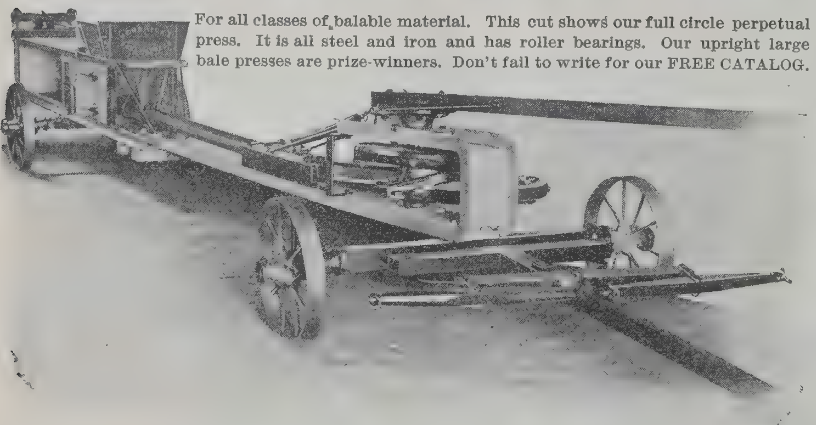

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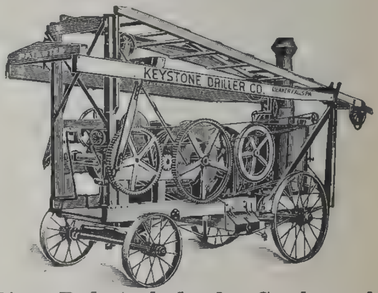
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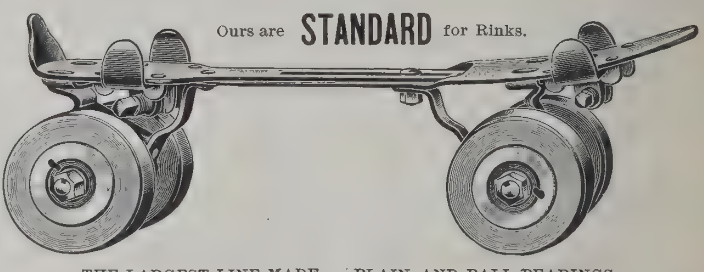

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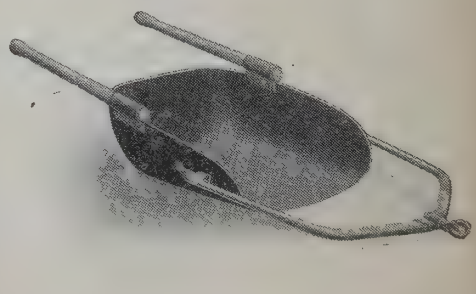

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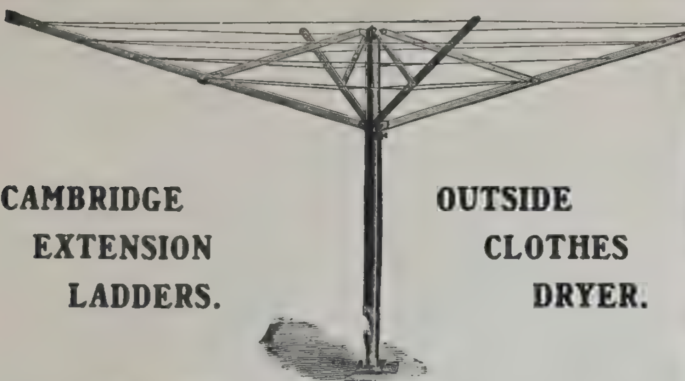

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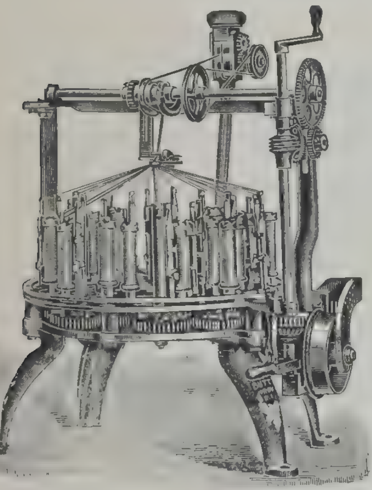

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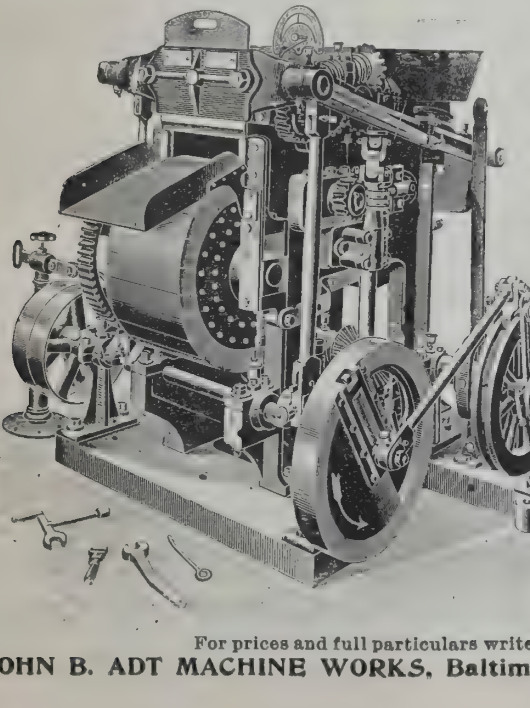
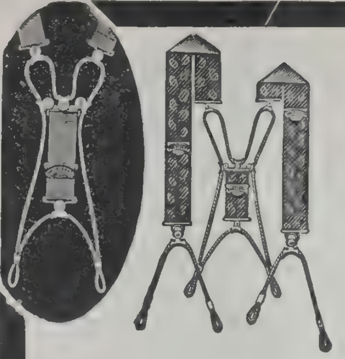


References:

Mural Bros., Kyoto, Japan.
N. Kimura & Co., Tokio, Jap.
Warnick, Brown & Co., Utica, N. Y.
Rock City Tobacco Co., Quebec, Canada.
Claussen Tobacco Co., Baltimore, Md.
American Tobacco Co., Porto Rico, W. I.
La Insular Tobacco Co., Manila, P. I.
Marburg Bros., Baltimore, Md. 2 machines.
Frishmuth Bros., Phila., Pa.
Axel Petterson & Co. Orizaba, Mexico.
German Moreno, Orizaba, Mexico.

And others where placed throughout the world by Export Commission Houses.

For prices and full particulars write
JOHN B. ADT MACHINE WORKS, Baltimore, Md., U. S. A.



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BALL-BEARING GARTERS

Swing like a pendulum with the motion of the leg. Lay flat; no binding; fit every leg perfectly. Easily adjusted. No stitching. Extra long adjustment.

Finest web, in many colors and patterns; packed in handsome boxes, 12 to carton. Handsome counter display carton with 3 doz.

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Liberal Discount on above prices in Quantity lots. Write for *Discount Sheet.* Illustrated Catalogue free.

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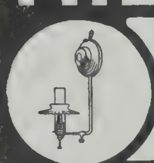

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A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

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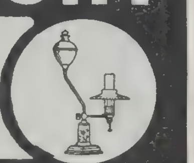

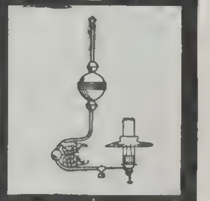

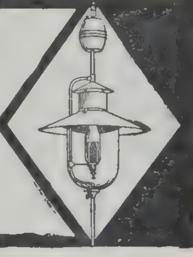

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Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

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Our catalogue, illustrating and describing the various styles of

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Planters, Cutters, Sprayers, Diggers and Sorters
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MANUFACTURERS AND EXPORTERS OF

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Single Break, Double Break, Quick Break, Front and Back Connected Switches, Combination Switches.

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VOLTMETERS and AMMETERS.

These instruments are particularly suitable for Isolated Plants and Feeder Circuits in Railway and Power Plants. Voltmeters in ranges from 3 to 750 volts; Ammeters in ranges from 1 to 2,500 amp. All Weston Instruments are unsurpassed in excellence of workmanship, in accuracy and economy of operation.

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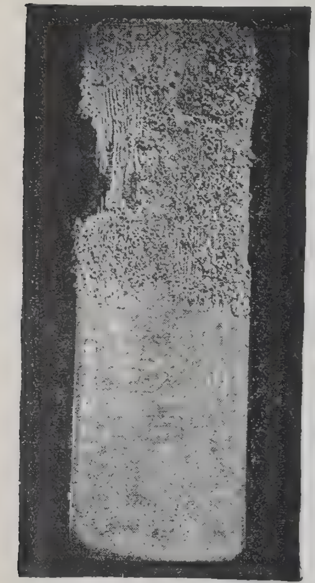
"NEW JERSEY" COPPER PAINT



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LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J. U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint,** manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."

"King of Entertainers"

Music of famous bands and orchestras, the living voices of Melba, Caruso, Calvé, Tamagno, DeLussan, Scotti, Campanari and other celebrated operatic stars can be heard in any home on the

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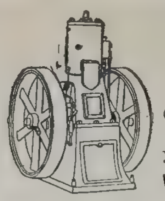

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Where known are recognized as the standard of perfection. They are clean to handle, do not smut or soil the work, are long-lasting and are made from the best colors. Send for catalogue. Orders received through any New York exporting house at export rates.

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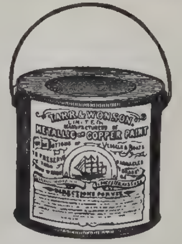
For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals: Gold, Silver and Bronze.



Excels on Every Point. Cheapest to Use in the End.

TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-TWO YEARS

RACING COMPOUND for Wooden Yachts' Bottoms, Bright and Smooth.

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$600.00 in a day; $6,000.00 in a month; $20,000.00 in a season

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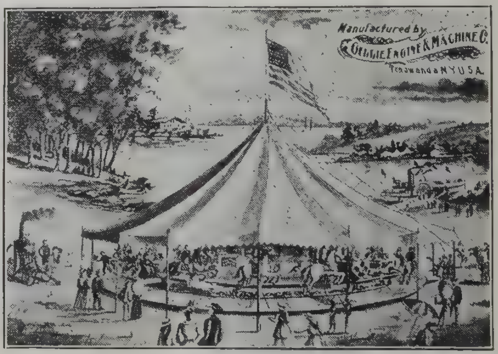
Suitable for County Fairs, Parks, Plazas, Pleasure Grounds, or any Public Place where young or old congregate.

Pays a larger dividend upon the amount invested than does any other known device made for the pleasure-loving public.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American Copper Paint, Yacht Red and Yacht Green, Anti-Corrosive Submarine Composition, First Coat; Anti-Fouling Submarine Composition, Second Coat; for Bottoms of Iron and Steel Vessels.

WHITE LEAD, ZINC, COLORS IN OIL,
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HAS NO EQUAL,

As its increased consumption each year clearly demonstrates. The same can be said of our full line of Marine Specialties, of which we are the largest manufacturers in the world. We guarantee our Copper Paints to be superior to any other make.

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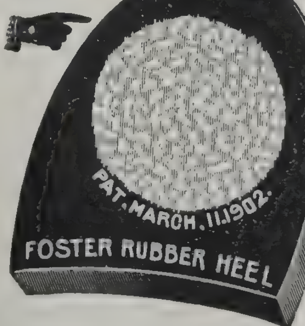
Every Pair Sells from Two to Fifteen Pair.



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"N. E. VAN VOORHIS, Newton."

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And **that's why** people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.

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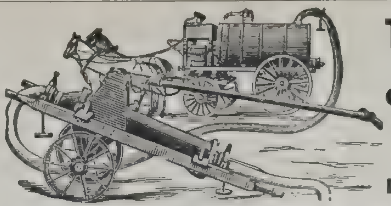

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ODORLESS PUMPS AND APPARATUS.

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There Is Only ONE ALBANY GREASE

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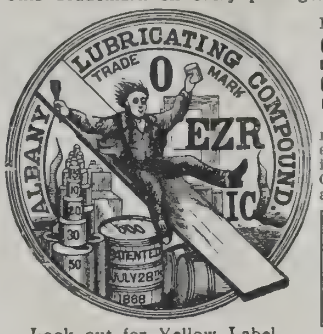

Look out for Yellow Label.

And we are the only Makers.
Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from ¼ to ⅛ in the cost of lubrication. Oils are advancing and it will pay to use **Albany Grease** at the present prices. Small 4-oz. sample free on application

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An Oily Paste Polish for ALL Black Leathers, Also

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For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for $12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

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The Best-Selling Shoe Polish

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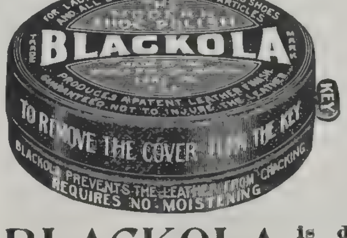
FOR LADIES, MEN AND CHILDRENS SHOES AND ALL BLACK LEATHER ARTICLES
BLACKOLA
TO REMOVE THE COVER TURN THE KEY
KEY
PRODUCES A PATENT LEATHER FINISH GUARANTEED NOT TO INJURE THE LEATHER
BLACKOLA PREVENTS THE LEATHER FROM CRACKING
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EVERY BOX HAS OUR OPENING KEY ATTACHED TO REMOVE THE COVER.

BLACKOLA **is different from every other shoe polish in quality and convenience.**

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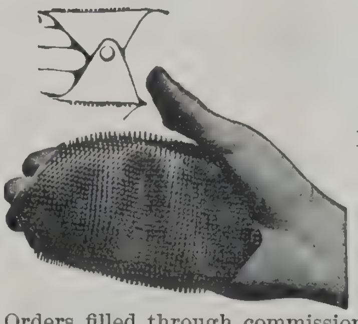

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If applied properly will remove

BLOTCHES,
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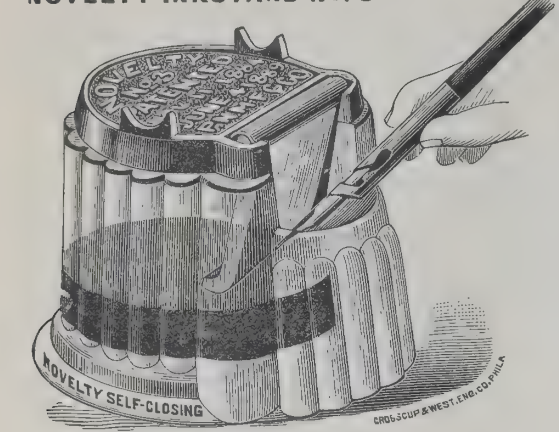
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American Novelties

NOVELTY (SELF-CLOSING) INKSTAND No. 1 (large), retail, - **75 Cents**

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All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of *Sydney, Melbourne, Adelaide, Barcelona* and *Paris,* for novelty, workmanship, finish, simplicity, utility and cheapness.

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Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

Just the Thing for the Kitchen.

PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

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Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2½ ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.

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MANUFACTURERS AND EXPORTERS OF

HIGH-GRADE CHOCOLATES

Orders Filled Through Commission Houses.

Correspondence Solicited.

Catalogue "S" will be sent on application to interested buyers.

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9 First Street, New York City.

MANUFACTURER OF

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Adapted for Street Use, Merry-Go-Rounds, Pleasure Gardens, Parks, Dancing Halls, Etc.

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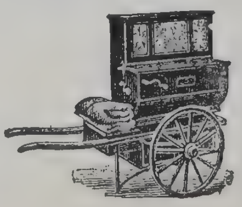

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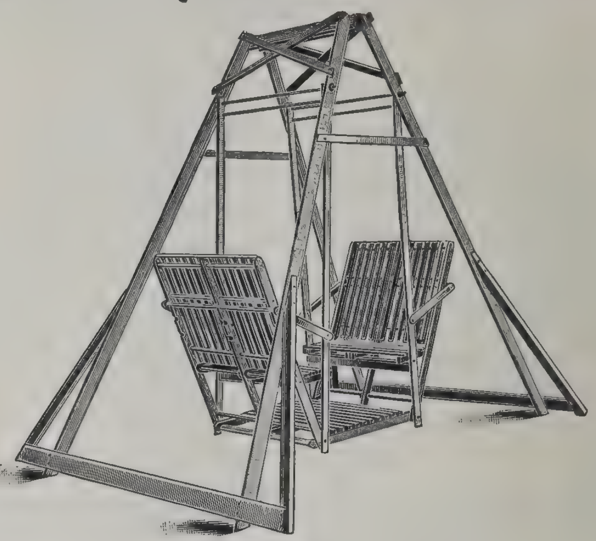
Have been on the market over 46 years, and have successfully stood the test of time.

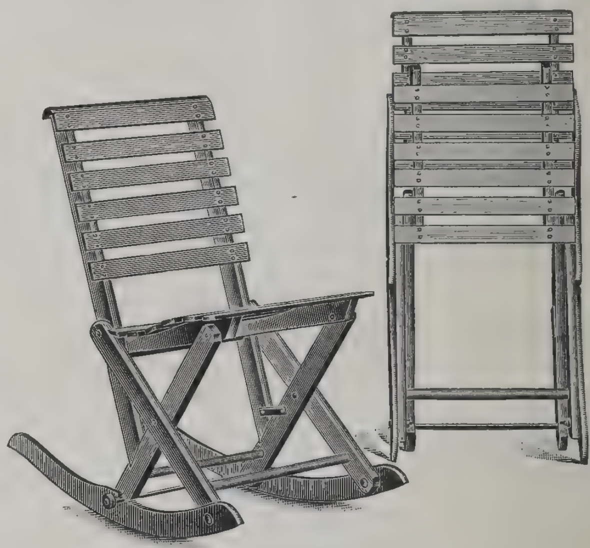
Our Motto Is: QUALITY in Every Instance.



New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen........................$30.50



Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

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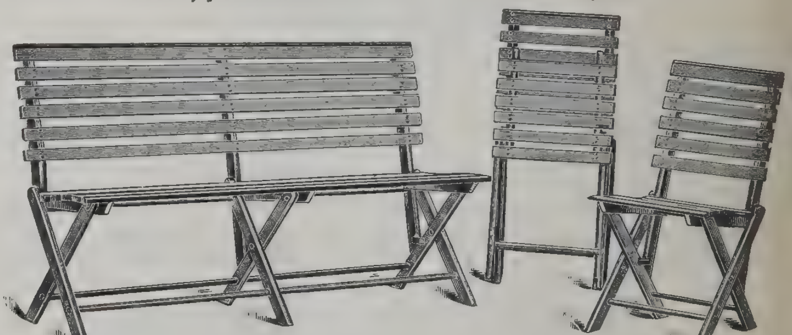

Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen..............................$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen.............................. $6.00

NOTE.—The prices above quoted are f. o. b. New York City.

We also make the Michael Porch and Lawn Reclining Chair.

C. H. MICHAEL MFG. COMPANY,

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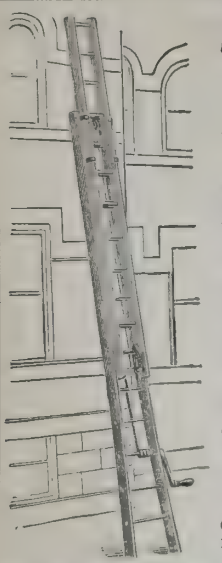

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HOUSEHOLD
WOODENWARE

FOR THE EXPORT TRADE.

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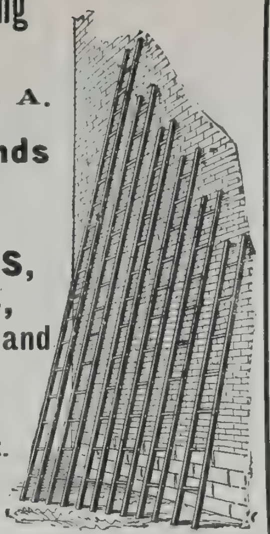
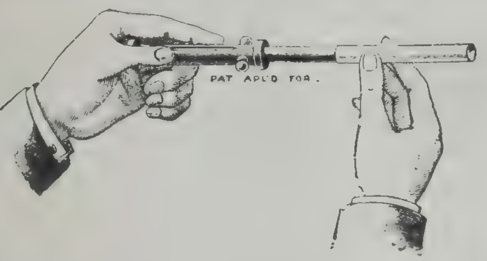


Imperial Pocket Cigarette Machine

Greatest Invention of the Age for Cigarette Smokers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It enables smokers to make their own cigarettes by using ready-made tubes which we supply with our machines. Plain or fancy tips can be had. Different grades of tobacco may be mixed to suit the smoker, and, while saving 300 per cent., he smokes at the same time the tobacco that suits his taste best.

On receipt of $25 in United States gold, or its equivalent, we will box, ready for steamer, and deliver f. o. b. cars New York, one gross Imperial Cigarette Machines, each in a box with 100 tubes. Agents wanted.

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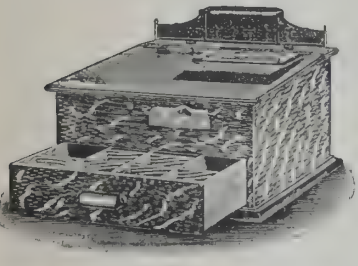

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The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

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NASHUA, N. H.
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ESTABLISHED 1859

Style No. 2.

The drawer is made with
Oak or Black Walnut Front,
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The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17x18 inches.

The Lock has 32 Combinations,

which can be changed instantly, and CAN NOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. **The Alarm** does not sound except when an attempt is made to open the drawer by an unauthorized person. This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

FOR THE HOME, LIBRARY, SICK ROOM, STUDIO, OFFICE, SCHOOL ROOM.

TRADE
THE STANDORETTE.
MARK.

An Invalid's Stand, Easel, Reading Stand, Book Rest, Music Stand, Card Stand, Sewing Stand Drawing Board, all in one handsome piece of furniture. The top can be raised or lowered, and revolves around the pedestal; automatic adjustments for tilting the top at any angle; folds compact for export.

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Box containing 12, gross weight, 300 lbs.; net, 200 lbs. Cubic feet, 14.

TIP TOP TABLE.

A first-class table, strong in construction, yet very light in weight. A handy table for the home, office, restaurant and summer garden. A half turn of the top places it in a vertical position, therefore occupying little space when set aside. It packs in the smallest space of any table yet designed and is specially constructed for export. The top is 30 inches in diameter: made of 5-ply veneer quartered oak.

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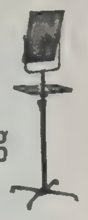

THE MIRROR is 8 x 10 quartered-oak frame.
RAISED OR LOWERED any height.
REVOLVES and TILTS either way.
A PEDESTAL is formed by removing the mirror.
It makes a nice reflector and dressing stand for the ladies.

All above articles made of steel tubing; finished, black enameled, oxidized copper or nickel-plated. Send for full particulars, prices, etc.

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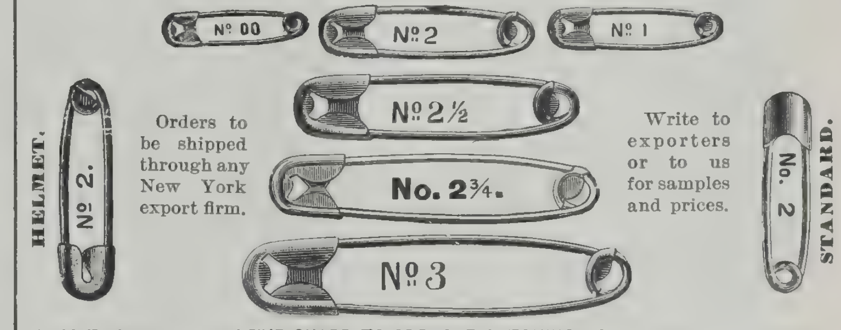

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Write to exporters or to us for samples and prices.

HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
MADE IN NICKEL-PLATE AND JET BLACK.

CONSOLIDATED SAFETY PIN CO.,
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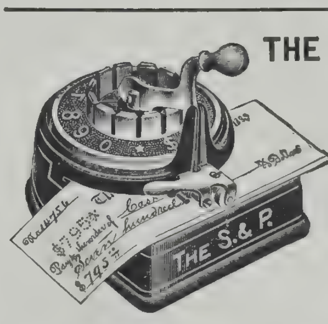

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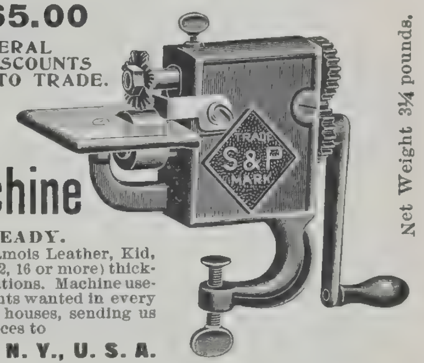

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Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

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A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

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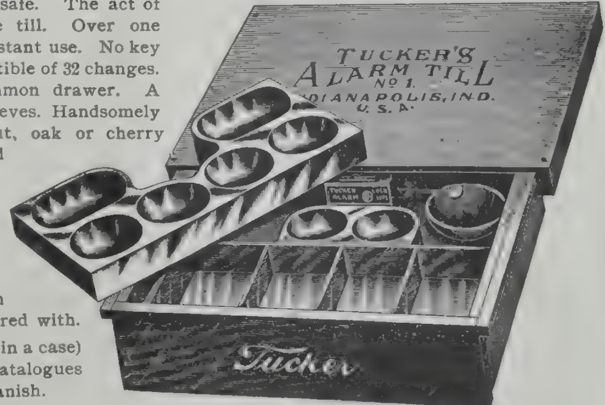
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ALARM TILL
No. 1.
INDIANAPOLIS, IND.
U. S. A.
Tucker

TUCKER & DORSEY MFG. CO., Indianapolis, Ind., U. S. A.

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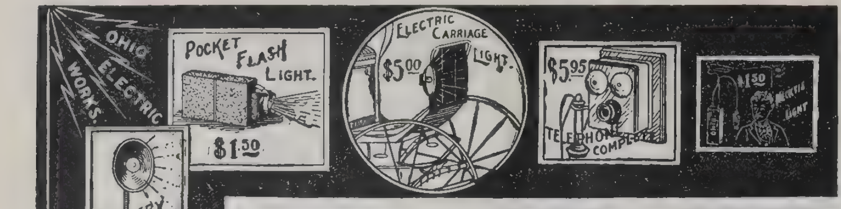

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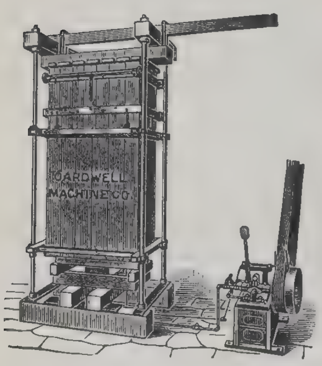
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For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from **$175** to **$350**, according to size.

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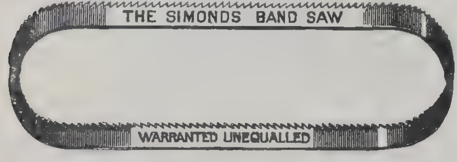

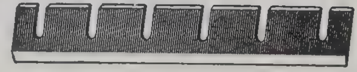

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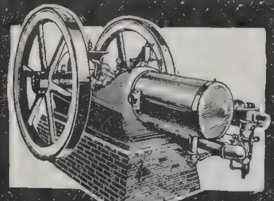

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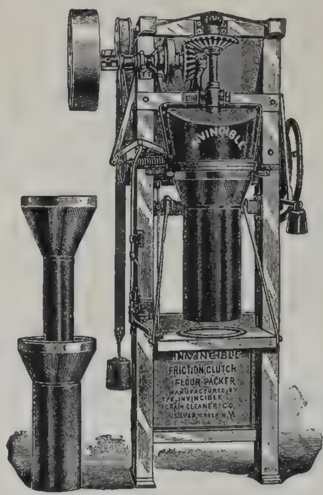
INVINCIBLE
INVINCIBLE FRICTION CLUTCH FLOUR PACKER
MANUFACTURED BY THE INVINCIBLE GRAIN CLEANER CO. SILVER CREEK, N.Y.

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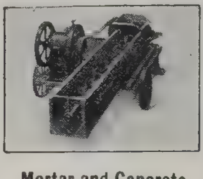
Elevating, Conveying, Power-Transmission Machinery.



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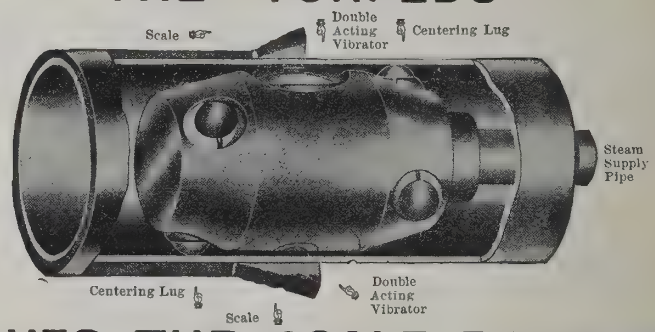

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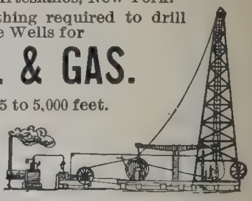

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Also Special Tools for Soundings and Test Borings for **Water** and **Mineral Prospecting and Developing Mines;** Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing Tools, Boilers, Engines, Etc.

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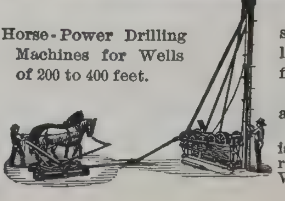

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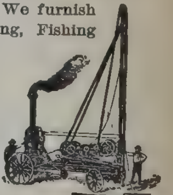

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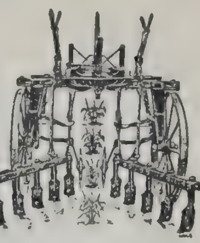

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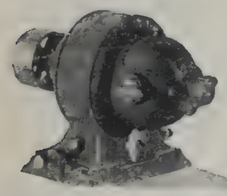

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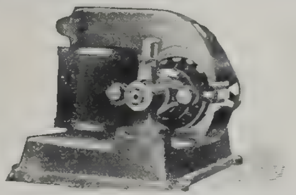

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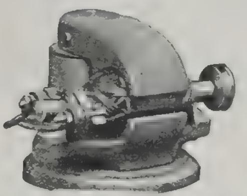

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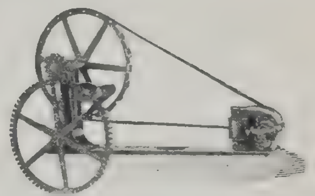

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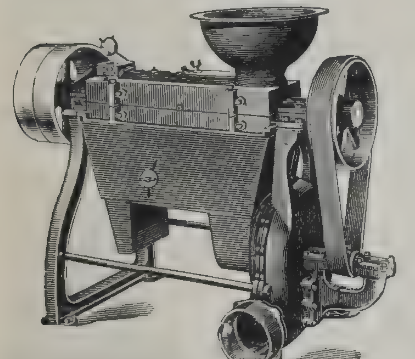

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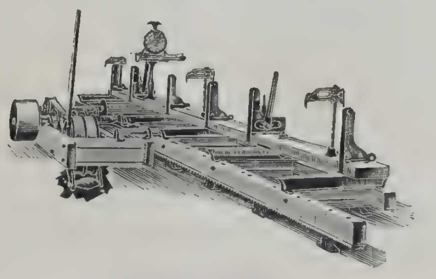

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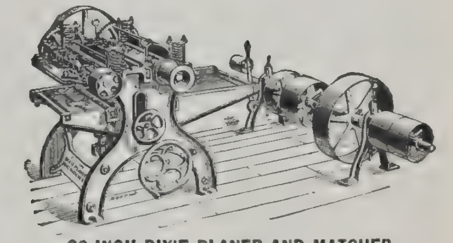

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For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

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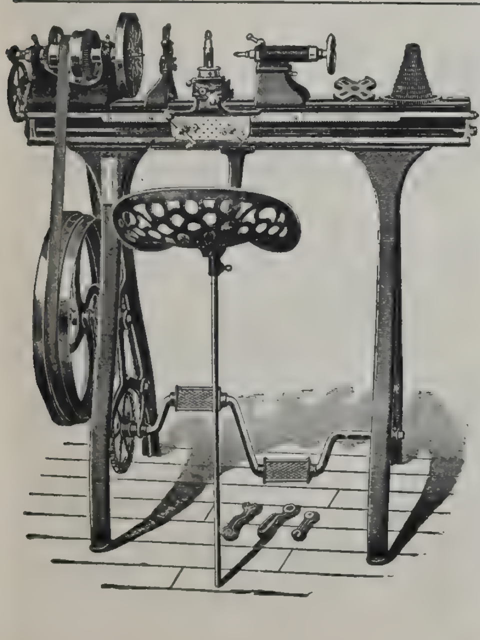

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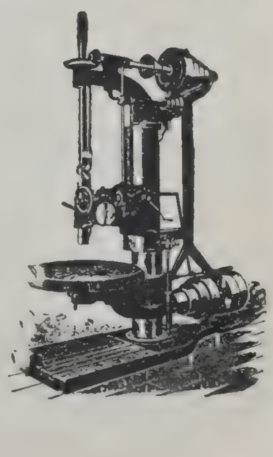

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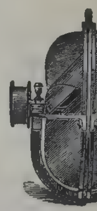

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Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,
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Pessaries,
Plant Sprinklers,
Plaster Bowls,
Politzer Bags,
Rectal Tubes,
Rubber Bands,
Stomach Tubes,
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Syringes,
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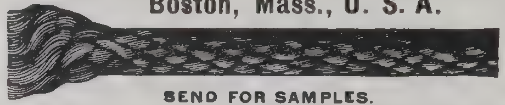
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SPECIAL OFFER ON TRIAL ORDER FOR EXPORT.

One each 4 Burner and Oven, and 2 Burner and Oven Acetylene Ranges. One each 1, 2 and 3 Burner Acetylene Hot Plates. One 4-Tube Acetylene Radiator. One Acetylene Mantle Burner, complete.

All the above sent carefully crated and boxed upon receipt of $50.00, current United States funds. Catalogue "C" on application.

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☞ Every Piece Manufactured by Us Fully Guaranteed.

Orders Filled Through Commission Houses. Correspondence Solicited.

SOLID BRAIDED CORDAGE.

Trade Mark.
Massachusetts Brand.

Sash Cord,
Clothes Lines,
Railroad Cords,
Arc Light Cord,
Lariats, Etc.

SEND FOR SAMPLES.

Awning Lines,
Masons' Lines,
Chalk Lines,
Curtain Cord,
Shade Line, Etc.

Trade Mark.
SAMSON BRAND.

SAMSON CORDAGE WORKS, - Boston, Mass., U. S. A.

INQUIRY OFFICE FOR NORWAY, SWEDEN AND DENMARK.

COLLECTION OF CLAIMS.
ASK FOR TERMS.

HEFFERMEHL & CO.,

ESTABLISHED 1895.

KRISTIANIA, NORWAY.

BOSTON FLOOR COMPANY, Boston, Mass., U. S. A.

—MANUFACTURERS AND EXPORTERS OF—

PARQUET FLOORS AND FLOOR FINISHES,

Also Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

Orders filled through commission houses. Correspondence solicited.

H. D. FOSS & CO., Manufacturers and Exporters of

QUALITY CHOCOLATES.

Quality Chocolates

IN BULK, FIVE-POUND BOXES, AND IN FANCY PACKAGES.

Orders filled through Commission Houses. Correspondence solicited. Booklet 1904 on application.

BOSTON, MASS., U. S. A.

QUALITY

Mustard Pot.
Ruby Glass Lining.
No. 952

L. A. LITTLEFIELD,

New Bedford, Mass., U. S. A.

Manufacturer and Exporter of

FINE

Silver-Plated Ware

Orders filled through commission houses.
Correspondence solicited.
Catalogue "A" on application.

Union Computing Machine Company,

3 Union Square West, N. Y., U. S. A.
Cable Address: "Computico, N. Y."

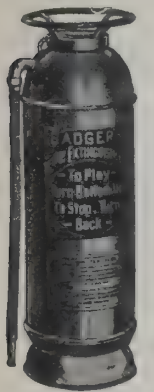
Manufacturers of

Union Cash Registers

Discounts on Application Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING CHECK AND STRIP PRINTING

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil); 6.1 cu ft. (172 cu. met.). Order direct or through any reliable exporter.



FIRE LOSS

PREVENTED BY THE USE OF

Badger's Fire Extinguishers

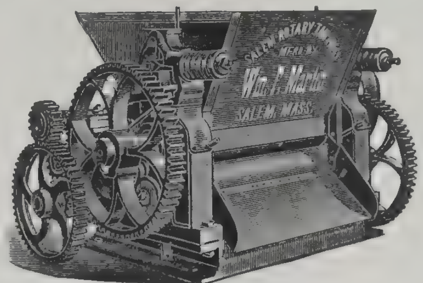
In Use All Over the World.

For full particulars apply to

E. B. BADGER & SONS CO.
40 Pitts St., Boston, Mass., U. S. A.

WILLIAM F. MARTIN, Salem, Mass., U. S. A.

MANUFACTURER OF



Rotary Tan Presses

for the pressing of spent tan bark for fuel. Will convert ten cords per day of dripping wet tan into dry fuel, ready to burn under boilers without the use of any other fuel. Orders filled through export commission houses. Circular "M" sent on application.

MAKE RUBBER STAMPS.

IT IS A PROFITABLE BUSINESS.

Our Vulcanizers and Outfits are in use throughout the world.

SPECIAL EXPORT OFFER.

Upon receipt of any of the following amounts in U. S. gold or its equivalent, we will box and ship through any commission house, f. o. b. New York.

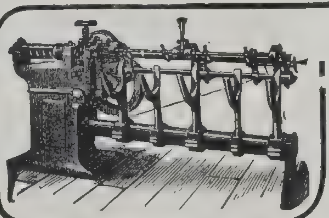
For **$25.** — **Outfit AA.** Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture $75 worth of Rubber Stamps.

For **$50.** — **Outfit CC.** Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture $150 worth of Rubber Stamps.

For **$100.** — **Outfit EE.** Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture $300 worth of Rubber Stamps.

With each outfit are sent complete instructions for operating. Catalogue and Price Lists sent upon request.

Barton Mfg. Co., 335 Broadway, New York.



Our Wire Straightening and Cutting Machinery and Riveters

are the original and standard machines improved, and are guaranteed in every respect. Design and workmanship the best; quantity and quality of production unequaled.

SPECIAL AUTOMATIC MACHINERY. We have large and varied experience in designing and building special automatic machinery. All our construction is substantial, combining speed and simplicity, securing the minimum expense for operation and repairs.

We have innumerable drawings and patterns, some of which might be adapted to your needs.

THE F. B. SHUSTER CO., Formerly John Adt & Son, **New Haven, Conn., U.S.A.**

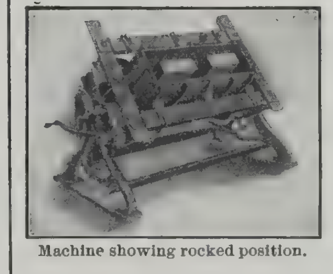
Francis Reed Company,

WORCESTER, MASS., U. S. A.

Manufacturers and Exporters of

Drills for Hand and Power. Clamp Drills, 2 styles, 4 sizes. Turret Drills. Bench Drills. Track Drills. Drills with 1 to 10 spindles for ⅜-inch holes, with hand or power feed. Nut Tappers with 2, 3 and 4 spindles. Planer Chucks, round and square base, with jaws 6 in. to 30 in. long.

Correspondence solicited. Catalogue on "R" on application.



Machine showing rocked position.

The WINGET CONCRETE MACHINE CO.

COLUMBUS, OHIO, U. S. A.,

MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

SEND FOR OUR NEW CATALOGUE.

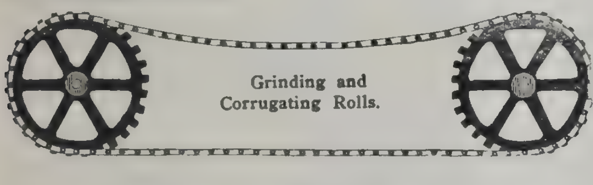
In order to facilitate our increasing export business, we desire to establish an agency with one responsible firm in each trade centre of the world.

Mey Detachable Chain Belt.

The Mey Chain Belting Engineering Works,

H. F. Mayer, Prop.,

14 Perry Street, Buffalo, N. Y., U. S. A.



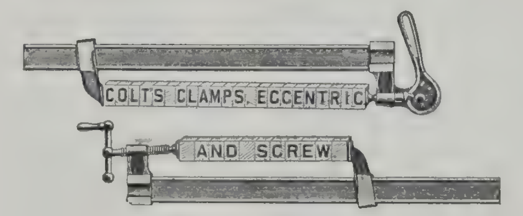
Grinding and Corrugating Rolls.

Manufacturer of Patent Mey Chain, Link Chain, Sprockets, Elevator Buckets, and Conveying and Elevating Machinery.

WRITE FOR CATALOGUE.

Colt's Eccentric and Screw Steel Bar Clamps.

Quick Acting.
Time Saving.

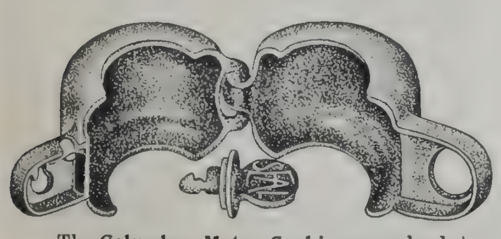


Orders filled through commission houses

Catalogues free on application.

MANUFACTURED BY THE

Batavia Clamp Co., 35 Center St., Batavia, N.Y., U.S.A.



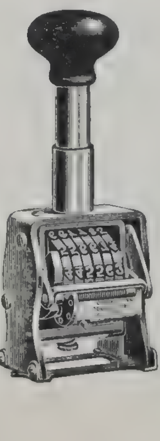
STOP THIEF!

NO MORE STOLEN GAS OR WATER.

The **Columbus Meter Seal** insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

COLUMBUS METER SEAL COMPANY,
COLUMBUS, OHIO, U. S. A.



The "RELIANCE" Automatic Numbering Machine

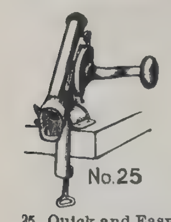
Price, $5.

Discount, 30 Per Cent. in Lots of 1 Doz.
(Six Wheels) Numbers from 1 to 1,000,000

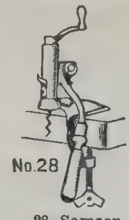
This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.
No rubber used in the construction, and every machine is sold with our guarantee.
Style of imprint:—

123456

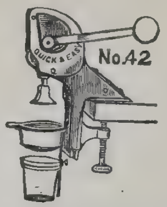
CUSHMAN & DENISON MFG. CO.
240-242 West 23d Street, New York



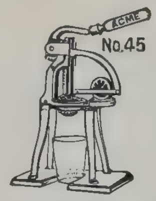
25. Quick and Easy. Cork Puller.



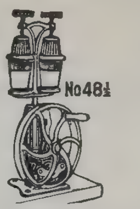
28. Samson Cork Puller.



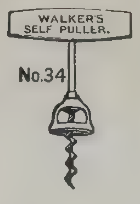
42. Quick and Easy Lemon Squeezer.



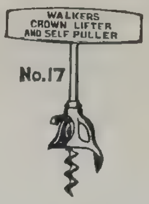
45. Acme Lemon Squeezer.



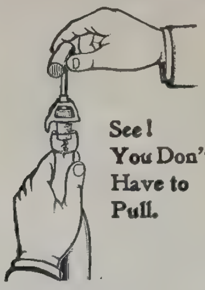
48½. Quick and Easy Shaker.



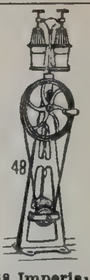
34. Self-Pulling Cork Screw.


WALKERS CROWN LIFTER AND SELF PULLER
No.17

17. Self-Pulling Cork Screw.



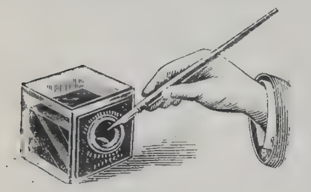
See! You Don't Have to Pull.



48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.



No. 7.

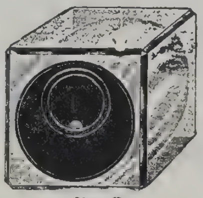
A FEW REASONS WHY

THE GARDNER

Is the Best Inkstand in the world.

The Gardner Inkstand is superior to any other make, for the following reasons: 1—It provides against evaporation, which soon earns its cost by the saving in ink. 2—Its peculiar construction prevents dust and dirt from getting in the ink, allowing it to retain its freshness as long as it lasts. 3—Absolute simplicity—there being nothing to get out of order.

Prices 65c. to $1.35 each.



No. 3.

THE ROYAL INKSTAND.

In point of simplicity, the ROYAL INKSTAND has no superior. Besides the glass reservoir, it is composed of only three parts—a rubberoid collar and an ink funnel and an arched diaphragm of soft rubber. These parts are all readily removable and easily separated from one another, without tools and without soiling the fingers.

No. 309. Royal, 25c. each.

Very Liberal Export Discounts.

C. H. NUMAN, Sole Mfr., New York City, U. S. A.

No. 30

J. C. F. PHINNEY, CUT SOLES, LYNN, MASS., U. S. A.

Orders filled through commission houses.
Correspondence solicited.

BROCKTON LAST CO. BROCKTON. MASS

Brockton Last Co.

Manufacturers and Exporters of FINE **LASTS** IN ALL SHAPES AND STYLES,

FOR MEN, WOMEN, YOUNG MEN AND MISSES.

Orders filled through commission houses. Correspondence solicited.

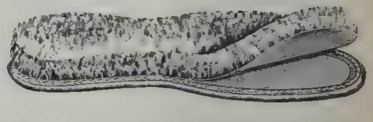
BROCKTON, MASS., U. S. A.

EDWARD M. BLISS,

MANUFACTURER AND EXPORTER OF

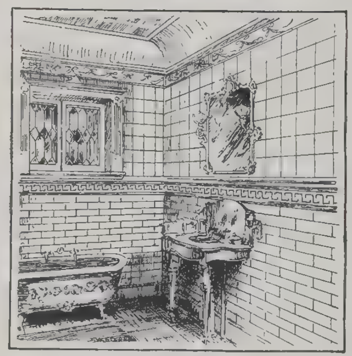
LAMB'S WOOL SOLES

AND HAND-CROCHETED WORSTED SLIPPERS IN ALL COLORS AND SIZES.



Ladies in the United States buy the wool soles, crochet and sew the upper onto the sole, thereby making their own slippers for house wear. Invaluable for invalids. Orders filled through commission houses. Correspondence solicited.

WORCESTER, MASS., U. S. A



SANITARY

walls are as necessary as sanitary plumbing.

ENAMETILE

is the best and most sanitary wall. Is made of metal enameled. Like ceramic tile, but better because lighter; does not crack, and costs about **one-third** as much. Hard to detect difference. Plates bedded in cement; no lap joints; no nails. Endless variety of patterns colorings and sizes. Suitable for wainscoting wall or ceiling.

Write for ART PORTFOLIO, showing Enametile in colors, and Metal Ceiling Catalog showing patterns for all purposes, FREE.

N. Y. METAL CEILING CO.,
538 &c. W. 24th St., New York City.

"They Sound Different"

BELL BRAND

STEEL and WOUND

Musical Strings.

For Violin, Guitar, Mandolin, Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

NATIONAL MUSICAL STRING CO.,
New Brunswick, N. J., U. S. A.

The National Emery Wheel Company

WORCESTER, MASS., U. S. A.

MANUFACTURERS OF

Emery and Corundum Wheels,

AND ALL KINDS OF

Emery Wheel Machinery, Emery, Corundum, Etc.
Thin Elastic Wheels a Specialty.

Orders received through commission houses. Correspondence solicited.

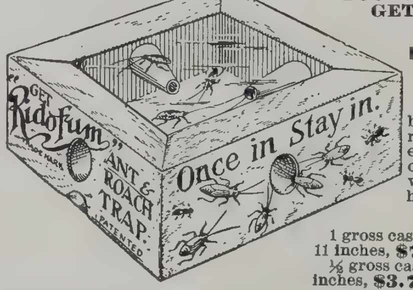
METAL CEILINGS.

We are constantly improving and adding to our line. Have you our catalogue?

We Are Manufacturers of Sheet-Metal Goods "from Start to Finish."

WHEELING CORRUGATING CO., 47-51 Cliff St., New York, U. S. A.

ROACHES and WATER BUGS



YOU CAN GET **"RID-OF-UM."**

TRADE MARK.

It Is Easy if You Use the "RID-OF-UM" Trap. A Sanitary Method of Destroying. No Poisons.

A careful study of the habits of all troublesome bugs usually found in stores, warehouses, hotels, restaurants, and sometimes in private dwellings, enables us to state with authority that when one of any kind of bug gets into the trap, all the rest will follow. Easily killed by dropping into fire or hot water. **Thousands in use.**

FOR INTRODUCTORY PURPOSES.

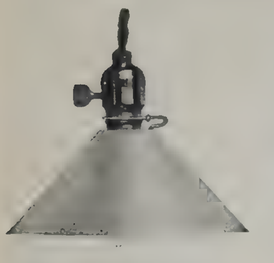
1 gross case, gross weight, 38 lbs. (17 kilos); size, 24½x16½x11 inches, **$7.00** (£1 9sh. 2d.) net f. o. b. New York.

½ gross case, gross weight, 20 lbs. (9 kilos); size 24½x16½x5½ inches, **$3.75** (15 sh. 8d.) net f. o. b. New York.

The Bennett Paper Box Co., Sole Maunfacturers, Springfield, Mass., U. S. A.

Emery is one of the rarest minerals—much less widely distributed than Gold. Turkey and Greece (Smyrna and Naxos) have been so identified with Emery that its existence in the United States is little known. This American mineral is as typically true an Emery as the Turkish or Greek, but is typically distinct, and also different in appearance from the Mediterranean ore. The percentage of crystallized Alumina is such that American Emery will readily cut Chilled Iron, Manganese Steel, and the very hardest metals. The individual grains are, however, less closely knit together, and they break down a trifle more readily. While this friability is undesirable when the Emery is used free or subjected to extreme pressure, it is of no consequence when the grain is embedded in glue or backed up in any way. Hence it is adapted for use in Solid Emery Wheels, on Leather Wheels, or on Cloth and Paper. For use on Glass this friability is an advantage. The Tanite Company, of Stroudsburgh, Pennsylvania, U. S. A. (who are the principal miners of this Emery), sell it by the carload for use on Emery Cloth; for the manufacture of Emery Cake and Polishing Compounds; for the Bevelling of Glass; for the Polishing of Plate Glass, and for use in all the Metal Working Trades. The mines being only about 130 miles from its factory, the Tanite Company can sell its Emery in any part of the world at prices lower than those of the Mediterranean article.

"FOR THOSE WHO WANT THE BEST."


Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:

Upon receipt of **$40.00** in U. S. gold or its equivalent, we will box and deliver f. o. b. cars at New York, five gross of these shades in assorted sizes.

APPLIED DEVICE COMPANY, Springfield, Mass., U. S. A.

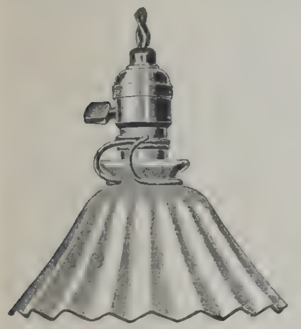
The WM. V. GEIS CO.

(INCORPORATED),
Manufacturers of

WIRE GOODS,

Far Rockaway, New York, U. S. A.

"IF IT IS MADE OF WIRE, WE HAVE IT"


The Screwless Shadeholder as it appears on the lamp.

The Screwless Shadeholder for electric shades is an article filling a long-felt want of the electrician. We ship them f. o. b. vessels New York City for **$15.00** per thousand. Our full line of samples and further particulars regarding prices, also copy of our latest illustrated catalogue, free on request.

The Glow Night Lamp.

A SCIENTIFIC WONDER

200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, generated from kerosene oil.
The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.

Style 1.

Style 2.

THE GLOW NIGHT LAMP CO., Incorp., 73-75 PEARL ST., Boston, Mass., U.S.A.

TROWBRIDGE CHOCOLATE CHIP CO.,

MANUFACTURERS AND EXPORTERS OF

ORIGINAL CHOCOLATE CHIPS.

Most dainty eating confection in the world. Crisp and delicious.

Orders filled through commission houses. Correspondence solicited. Send for Circular A.

BOSTON, MASS., U. S. A.

T. B. Clark & Co., Inc.

Manufacturers of

RICH CUT GLASS

Honesdale, Pa., U. S. A.

DAY WOOD HEEL COMPANY,

MANUFACTURERS AND EXPORTERS OF

Artistic Wood Heels

Orders filled through commission houses.
Correspondence solicited.

LYNN, MASS., U. S. A.

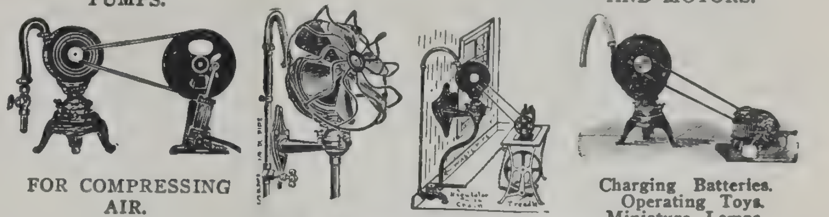
AGENTS WANTED.

WATER MOTORS AND FANS, ETC.

Adjustable Every Way While Running.

Patented June 28, 1898. Beware of Infringements.

PHYSICIANS' AIR PUMPS. FANS. WATER MOTORS. SMALL DYNAMOS AND MOTORS.

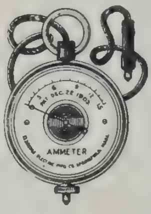


FOR COMPRESSING AIR.

Charging Batteries.
Operating Toys.
Miniature Lamps.

LOOK FOR OUR NAME ON MOTORS.

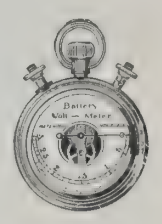
The A. ROSENBERG CO., MANUFACTURER, **Baltimore, Md., U. S. A.**

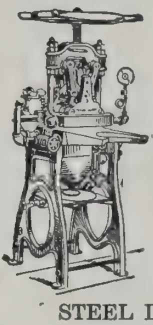


POCKET Voltmeters and Ammeters

FOR BATTERY TESTING.

Eldredge Electric Manufacturing Co.,
SPRINGFIELD, MASS., U. S. A.





VULCANIZING OUTFITS

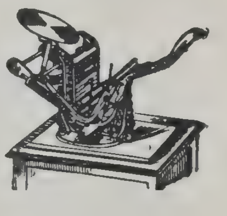
FOR THE

Manufacture of RUBBER STAMPS

A PROFITABLE ENTERPRISE.

Write for Catalogue No. 7.

Self-Inking HAND PRINTING PRESSES.



SOLID RUBBER TYPE.
STEEL DIES AND STENCIL SUPPLIES.

THE J. F. W. DORMAN CO.,
Box 993, Baltimore, Md., U. S. A.

PAUL MFG. CO.

Manufacturers and Exporters of

CANDO Silver Polish

Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

Orders Filled Through Commission Houses.
Correspondence Solicited. Circular C on Application.

BOSTON, MASS., U. S. A.

CLEAN, COOL, HEALTHFUL.

New Pompadour Roll Comb.

Celluloid Combs.

OUR SPECIALTIES ARE

Side Combs,
Back Combs,
Pompadour Combs.

Orders filled through commission houses.
Correspondence solicited.

G. W. RICHARDSON COMPANY,
NEWBURYPORT, MASS., U. S. A.

Pentucket Wood Heel Co.

MANUFACTURERS AND EXPORTERS OF

WOOD HEELS.

Also Fancy Covered Heels.

Orders filled through commission houses.
Correspondence solicited.

HAVERHILL, MASS., U. S. A

The VAN BIBBER ROLLER CO.

CINCINNATI, OHIO, U. S. A.

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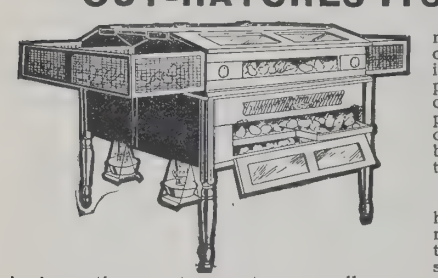

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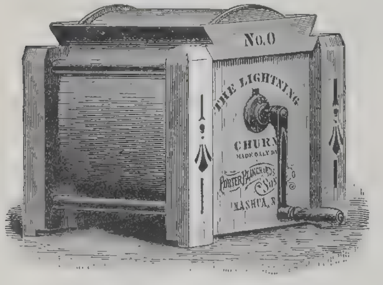

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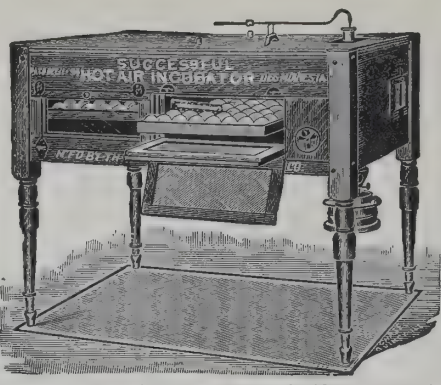

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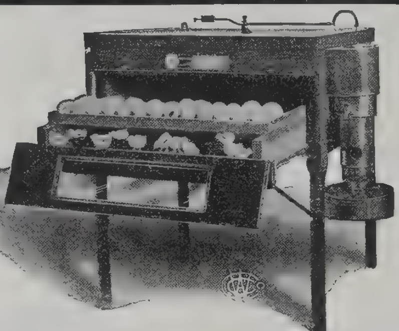

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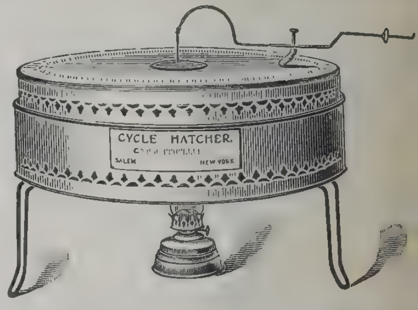

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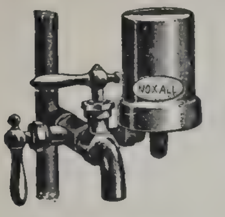

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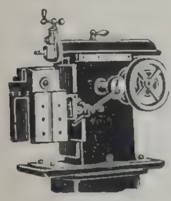
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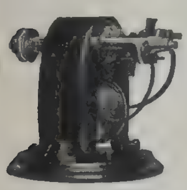
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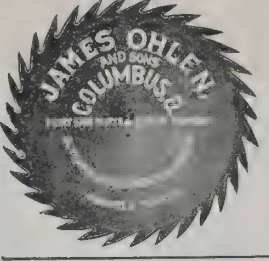

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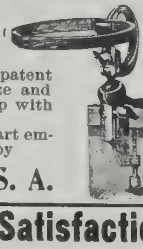
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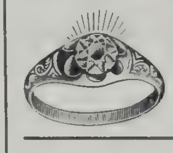
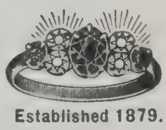
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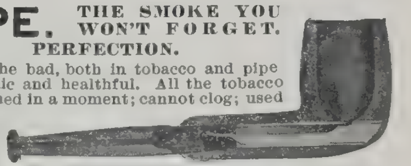
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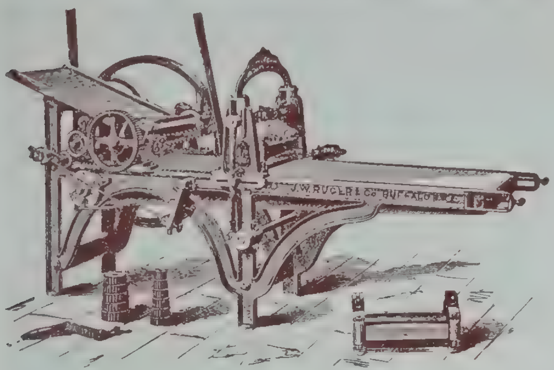

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Has patent connecting rod, adjustable cutter arm, is heavily geared and has the improved positive-feed motion.

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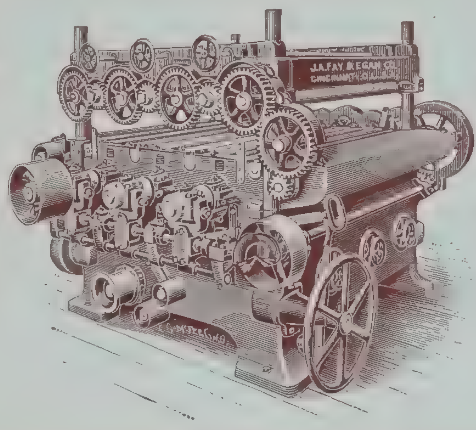

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Have you much sanding to do? If you have, are you doing it by machine, and, if so, with the best? The saving in paint and varnish by using our sander will soon repay its cost, then makes clear profit ever after We will not describe here the points that enable it to do this (we have circulars for that), but want to convince you of its worth through the words of your competitor—he knows, and that's why he's winning your trade.

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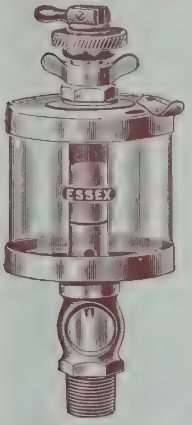

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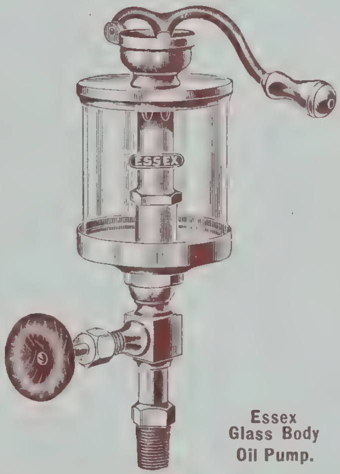
☞ Ninety per cent. of automobile makers in the United States of America use exclusively the Essex Automobile Lubricators.



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SIGHT-FEED LUBRICATORS, OIL CUPS, OIL PUMPS, OILING DEVICES, GREASE CUPS.

Note.—With the view of facilitating our increasing EXPORT TRADE, we desire to communicate with one energetic merchant in each trade center of the world.

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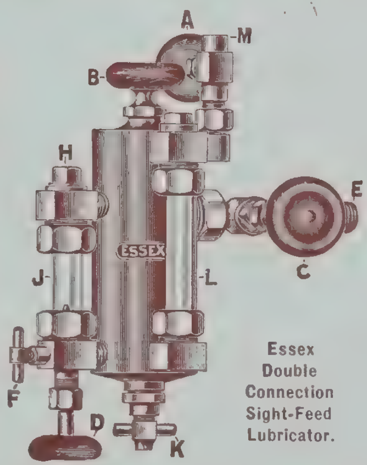

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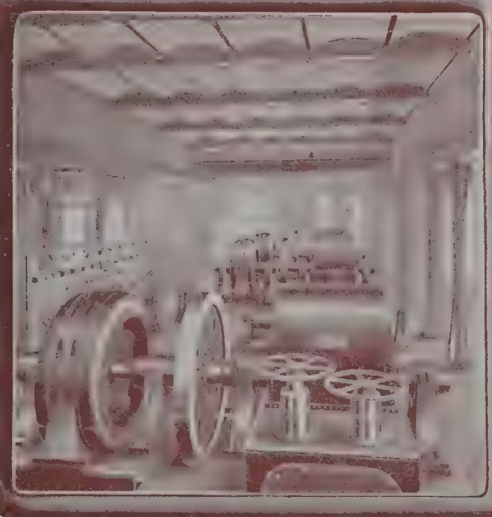
THE G. B. ESSEX BRASS CO. Manufacturer, DETROIT, MICH., U. S. A.



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PELTON WHEELS ON THE ISLAND OF MAURITIUS.

When Portuguese adventurers discovered the Mauritius Island in the Indian Ocean, east of Madagascar, in 1505, it was little thought that 400 years later real civilization would begin by the installation of Pelton Water Wheels.

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A valuable book on hydraulics mailed free.

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LANE'S PATENT LEVER SET.

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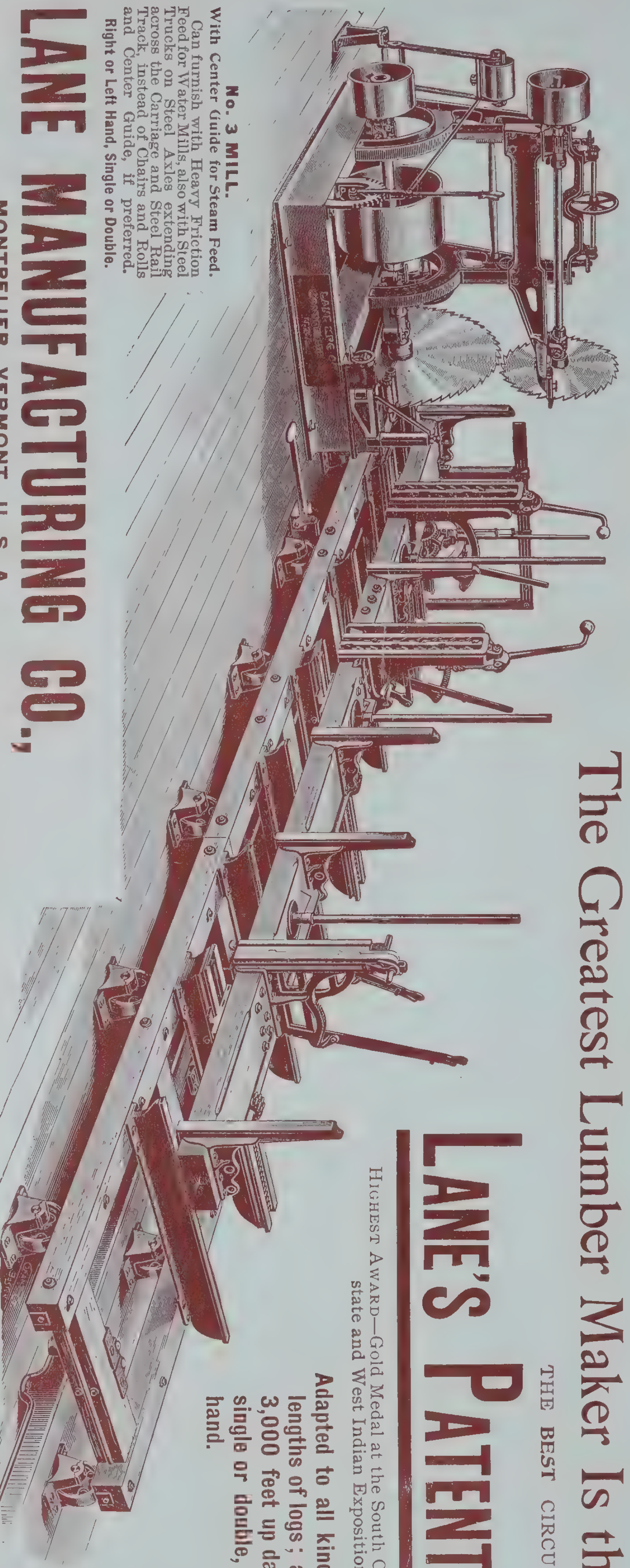
Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



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The American Exporter

WITH WHICH IS INCORPORATED
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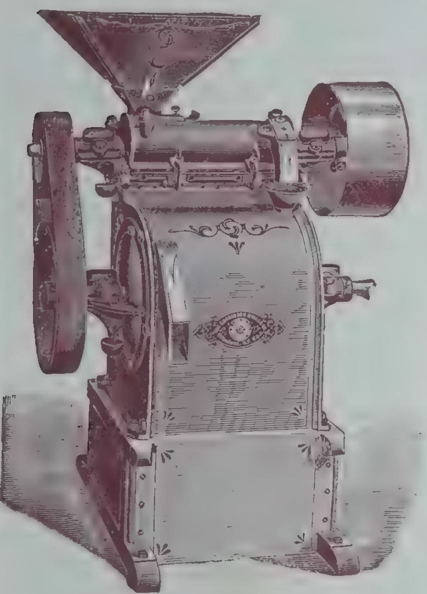
Vol. LV. NEW YORK, MARCH, 1905. No. 4.

Rice and Coffee Hulling Machinery


Improved Rice Huller and Polisher.

OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

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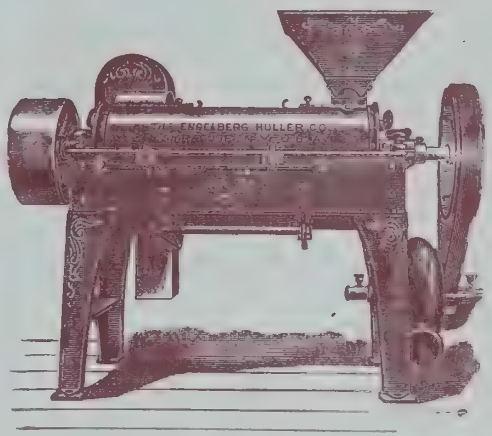
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.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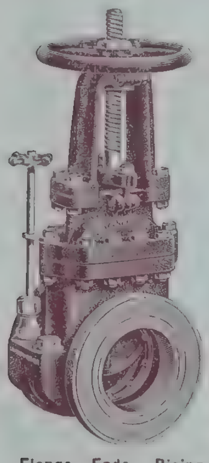
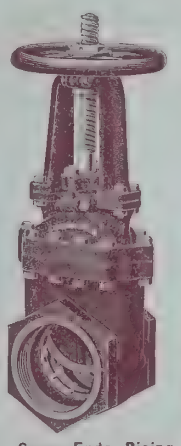
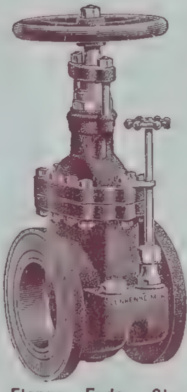

Flange Ends, Rising Stem and Yoke with By-Pass.


Screw Ends, Rising Stem and Yoke.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BRANCHES: { 26 Cortlandt Street, NEW YORK.
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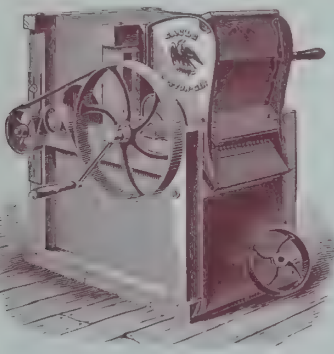
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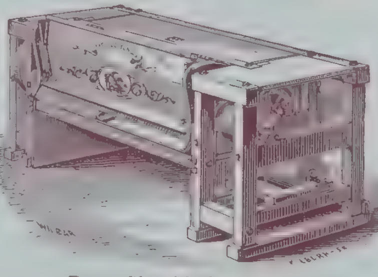
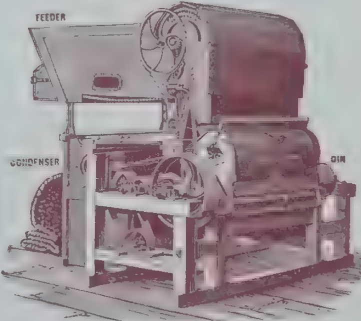
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.


Power Gin with 12-inch Saws.



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We are the largest lantern manufacturers in the world and consequently have the best facilities for turning out perfect goods and making prompt shipments. All our methods and machinery are up to date, and our long experience with the export trade enables us to handle the largest orders with perfect ease.

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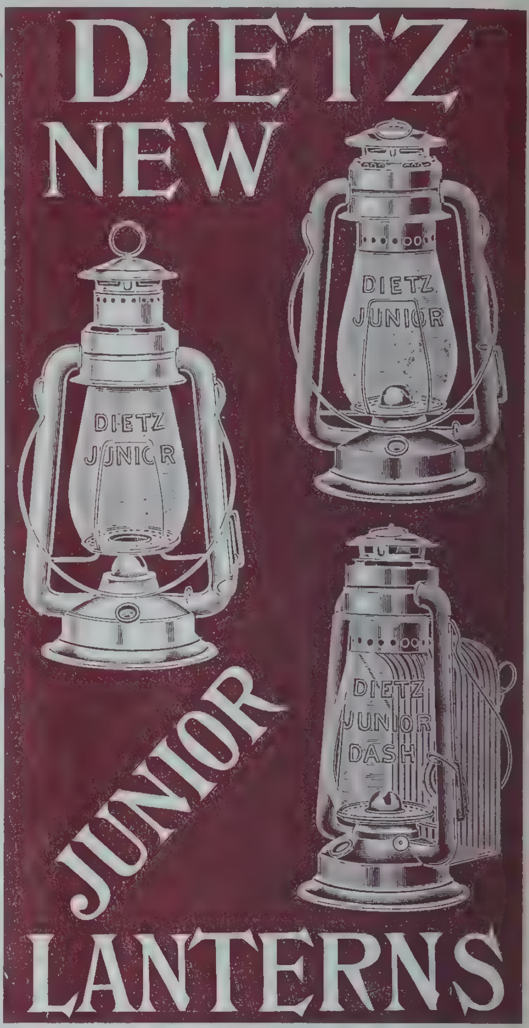
Packed 1 Dozen Each in a Case. Discount for Export, 50 and 10%

We will be pleased to send you pro-forma invoice showing cost of 1 gross of any of the above, laid down in your port, or any other lantern you may select in our catalogue (English or Spanish), which we will mail upon request.



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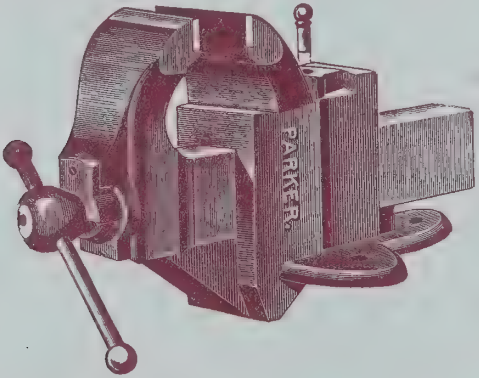

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Unequaled for Strength, Durability and Finish.

Has stood the test of over 50 YEARS.

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The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

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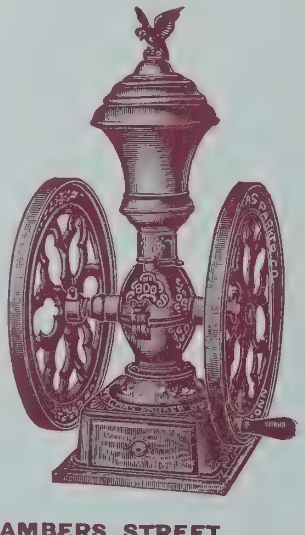
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.



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COFFEE MILLS.

"Phoenix" Cork Puller No. 30, Without Bottle Holder.

NEAT, SIMPLE, COMPACT.

"So simple any one can operate them."

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"Phoenix" Cork Puller No. 60 With Bottle Holder.

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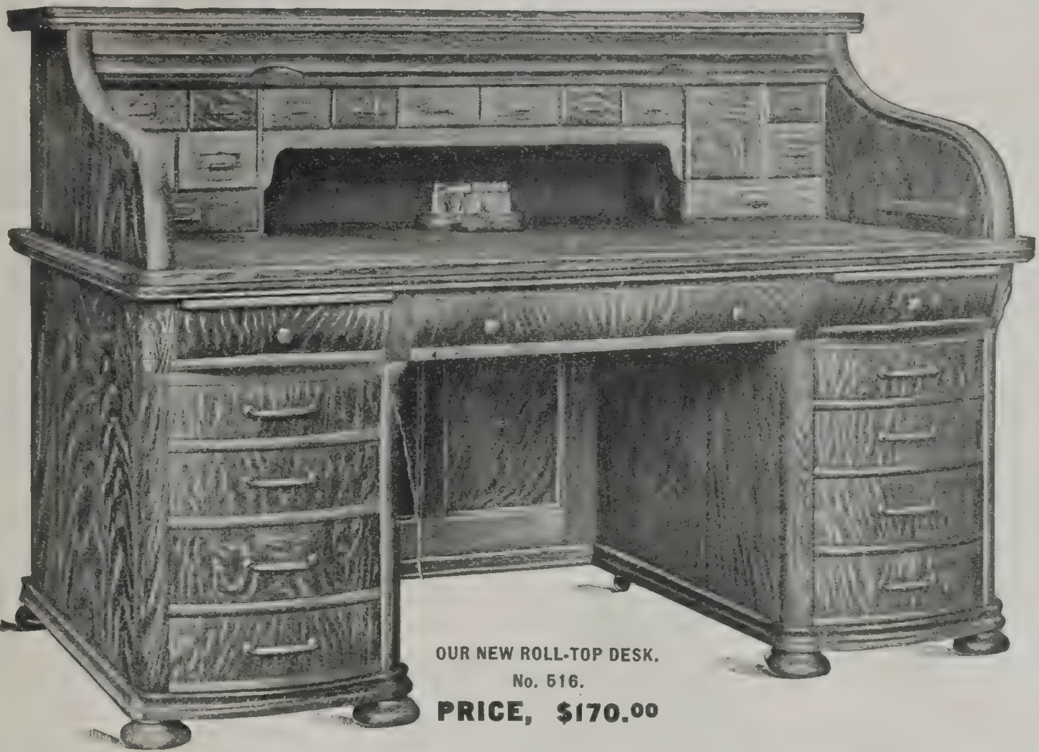

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SECTIONAL BOOKCASES

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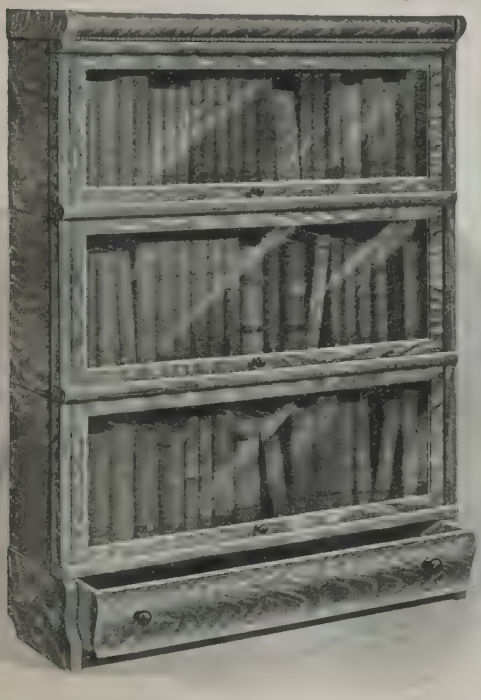

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Set up with top and base, showing drawer. Each section measures (inside) 32 in. in width and 10¼ in. in height. Made of selected quarter-sawed oak, wax or handsome polished finished.

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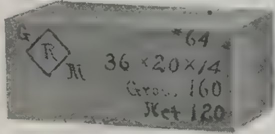

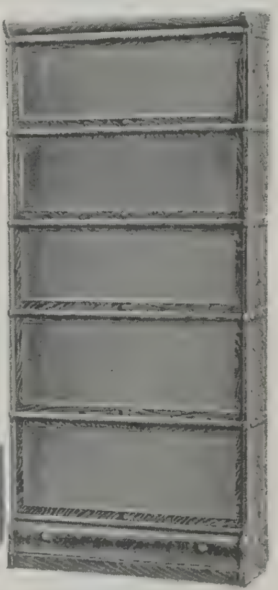

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Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

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Send all orders through your commission house and send us copy of same.

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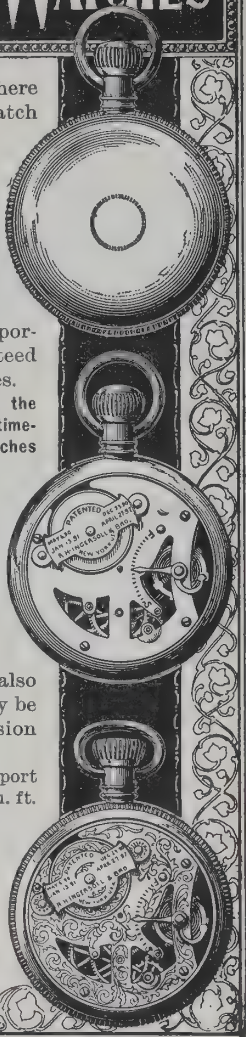

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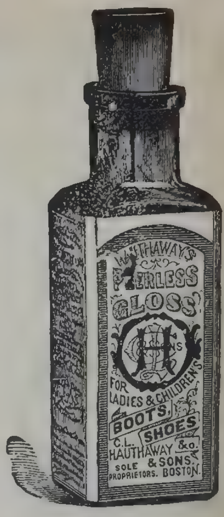
Specialties.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GLOSS
FOR LADIES & CHILDREN'S BOOTS & SHOES
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SOLE PROPRIETORS, BOSTON.

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Russet Leather Polish.

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For polishing patent leather shoes quickly and without injury to the leather.

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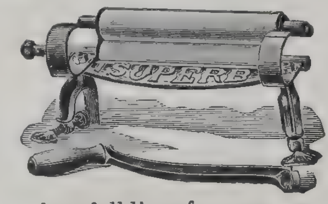
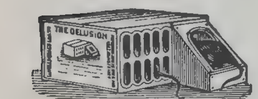
Erie, Pa., U. S. A.
Export Department: 54 Warren Street, New York.
Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.

Send for Catalogue and Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion Mouse Trap.

Requires no setting.

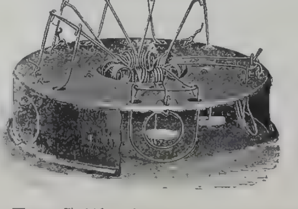
Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.

Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS.—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch."
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."

Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish.



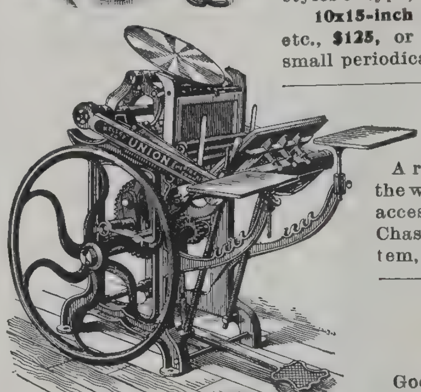
Lovell's Easy-Setting Metallic Mouse Trap

CHEAP PRINTING.

Hand presses, easy to use by man or boy. Typesetting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **$125**, or with more type, rules, etc., for small periodical, **$200.**

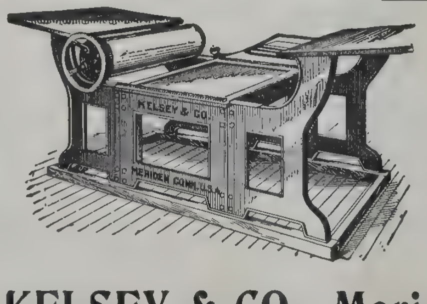


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **$12.00.**


KELSEY & CO.
MERIDEN CONN. U.S.A.

Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches, Price, **$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages. paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

The Improved United States Cream Separators

are the most practical machines for the complete separation of milk from cream by mechanical means. They combine simplicity and durability with large capacity. The strong construction of the U. S. reduces repairs to a minimum. The hand sizes have capacities of from 150 to 700 pounds of milk per hour, and may be operated, if desired, by any kind of power by attaching pulley.

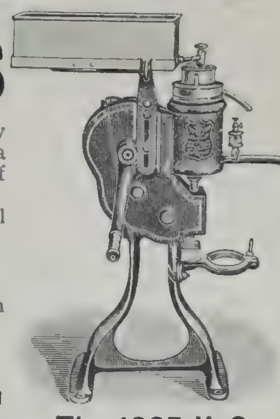
The bowl, where the separation takes place, is the acme of simplicity, having only two parts inside. It will skim milk at a wide range of temperature, **and holds the world's record for close skimming.**

PRICES OF HAND SIZES FROM $50.00 TO $165.00.

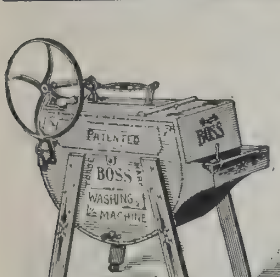
Illustrated catalogues sent postpaid for the asking. Orders received through export commission houses. (In each case duplicate order should be mailed to us.)

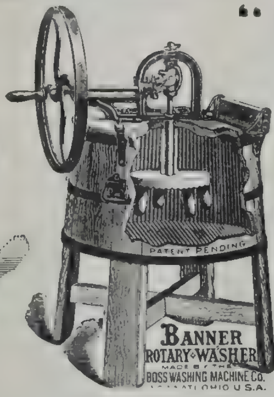
THE VERMONT FARM MACHINE CO., Bellows Falls, Vt., U.S.A.

Cable Address: Vermonfarm, Bellows Falls. Lieber's, Western Union Int. and Commercial Codes.



The 1905 U. S.




PATENT PENDING
BANNER ROTARY WASHER
MADE BY THE BOSS WASHING MACHINE CO.
CINCINNATI OHIO U.S.A.

"BOSS" Line of Clothes Washing Machines

Will cleanse any fabric quick and without the slightest injury. These machines are a

NECESSITY WHEREVER CLEAN CLOTHES ARE DESIRED.

It will pay you to secure our catalogue and price-list before placing your order elsewhere.

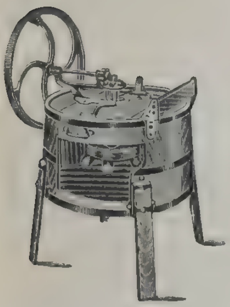
MANUFACTURED BY

BOSS WASHING MACHINE CO.

CINCINNATI, OHIO, U. S. A.

Largest Manufacturers in the World of Clothes Washers.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

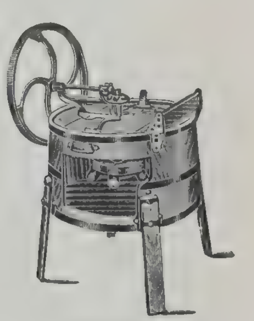


GUARANTEE WASHER.

THE Guarantee

FOUR-STROKE ROTARY

Washing Machine



GUARANTEE WASHER.

Just placed upon the foreign and home markets, combines the **Latest Improvements** in **High-Speed, Ball-Bearing Washing Machines** and will accomplish all that is claimed for or required of any washing machine **and more.**

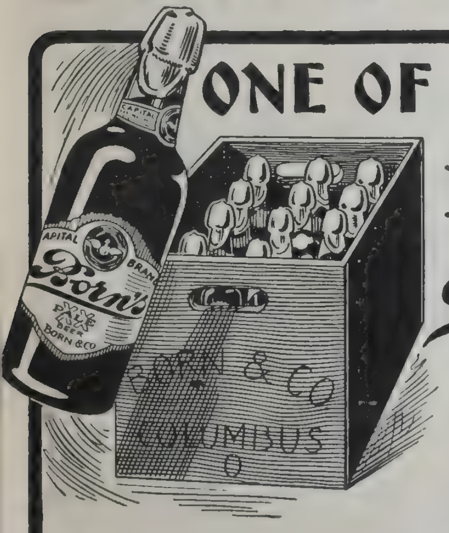
NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds Order FOUR NOW. Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States. NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

BORN & CO. Columbus, Ohio, U. S. A.



ONE OF A DOZEN good reasons why you should drink Born's XX PALE BEER is because it is brewed from the best materials.

A GOOD SPRING TONIC.

BREWERS and EXPORTERS of

BORN'S CELEBRATED XX PALE and MUENCHNER BEERS.

The Absolute Purity and Superior Flavor of Our Beers Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts Born's Muenchner, packed in barrel
3 " " " XX Pale " " " } **$10.00** net cash, F. O. B., N. Y.

5 doz. pints Born's Muenchner, packed in barrel
5 " " " XX Pale " " " } **$10.00** net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, **$10.00** net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), **$9.00** per barrel, F. O. B., N. Y.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size..........$14.00
Price per gross, small size.......... 7.50
Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.

GRIFFIN
PARISIAN DRESSING
A BLACK DRESSING
FOR LADIES & CHILDRENS SHOES
MADE OF MOROCCO, KANGAROO, DONGOLA, PEBBLE AND STRAIGHT GOAT, GLACED AND FRENCH KID.
Made by Griffin Manufacturing Co.
NEW YORK, U.S.A.
GRIFFIN PARISIAN DRESSING A BLACK DRESSING FOR LADIES' SHOES

We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes. Price, per gross, $8.00. Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.

GRIFFIN
STERLING COMBINATION
FOR BOX CALF, VICI KID, CORDOVAN, KANGAROO, GLAZED KID, GOAT AND ALL BLACK DRY LEATHER
GRIFFIN MFG
MANUFACTURING
82 CORTLANDT
NEW YORK U.S.A.

Price per gross, large size..........$15.00
Price per gross, small size.......... 8.00
Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.

Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty is should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size..........$6.00
Price per gross, small size.......... 3.50
Discount, 10 per cent.

Griffin Patent Leather Polishing Paste.

Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size..........$6.00
Price per gross, small size.......... 3.50
Discount, 10 per cent.

GRIFFIN
RUSSET LEATHER
GRIFFIN
TRAVELER'S OUTFIT
FOR Cleaning and Polishing ALL KINDS OF RUSSET LEATHER
GRIFFIN MFG
82 Cortlandt
GRIFFIN RUSSET LEATHER POLISHING PASTE GRIFFIN MFG Co NEW YORK

Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross......................$18.00
Discount, 10 per cent.

GRIFFIN SNOW WHITE.

GRIFFIN
TRADE MARK
SNOW WHITE
FOR CLEANING AND REWHITENING WHITE SHOES MADE OF CANVAS, BUCKSKIN AND SUEDE.
GRIFFIN MFG. CO.
NEW YORK

For cleaning and rewhitening white shoes made of canvas, suede and buckskin.

Price, per gross, $10.00.
Discount, 10 per cent.

GRIFFIN
Sterling Dressing
GRIFFIN
TRAVELERS OUTFIT
FOR Beautifying and Polishing Gentlemen's and Ladies' Shoes
GRIFFIN
82 Cortlandt
GRIFFIN STERLING POLISHING PASTE GRIFFIN MFG CO

Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, Franch Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross......................$18.00
Discount, 10 per cent.

NONE BETTER MADE AT ANY PRICE.

Send us a trial order through any commission house in New York; above prices f. o. b N. Y.

GRIFFIN

High-Grade Shoe Polishes.

GRIFFIN M'F'G CO.,

82 Cortlandt St., New York, U. S. A.

THOMAS K. OBER & CO. (INC.)

832 DREXEL BUILDING, PHILADELPHIA, PA., U.S.A.

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

KEROS INCANDESCENT OIL LAMPS

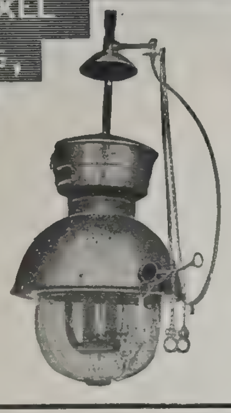
give the most economical light in the world. Burn 90 per cent. of air to 10 per cent. of oil. Air costs nothing.

One Gallon of Kerosene Oil Gives a 2,000-Candle-Power Light for Twelve Hours.

PERFECTLY SAFE.

Lamps for Lighting Streets, Stores, Parks, Wharves, Mines, Plantations and Private Houses.

See June, 1904, number of this Journal for illustrations of various styles. Illustrated catalogues free on application.



No. 190x. Outside Lamp; outfit with tank; 2,000 candle-power; 30 inches.

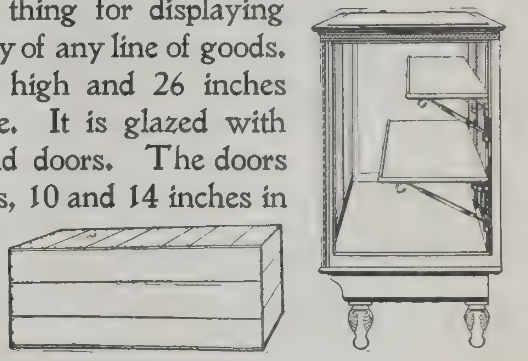
No. 501. Bracket Lamp; outfit with tank; 1,000 candle-power; 15 inches.

KNOCK-DOWN SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



8-Foot No. 31 Show Case.

Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 384 lbs, gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

GRAND RAPIDS FIXTURES CO.

GRAND RAPIDS, MICHIGAN, U. S. A.

"THE QUICKEST MONEY-MAKER EVER PLACED UPON THE MARKET."

IRVING'S NEW WIZARD OR "GY-ROTARY" TOP.

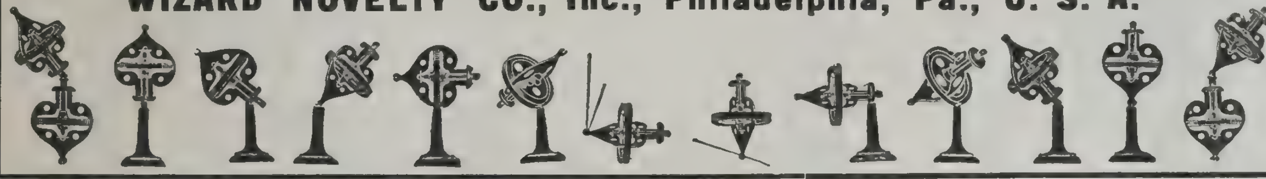
Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

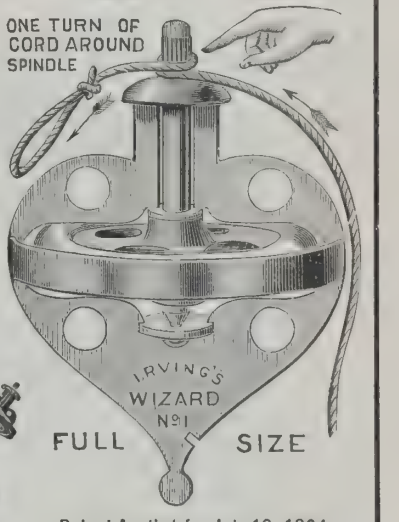
THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high-speed machine, made of **STEEL**, nickel-plated; **capable of 20,000 revolutions per minute**, and can be put in motion by a child in three seconds Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

FOR EXPORT ONLY——$9.00.

Upon receipt of $9.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, one gross (144). IRVING'S NEW WIZARD OR "GY-ROTARY" TOPS. Weight, boxed, 30 pounds. Size of box, 17⅛ x 8½ x 8½ inches. **ORDER NOW. YOU WILL SURELY WANT MORE.**

WIZARD NOVELTY CO., Inc., Philadelphia, Pa., U. S. A.




ONE TURN OF CORD AROUND SPINDLE
IRVING'S WIZARD No. 1
FULL
SIZE

Patent Applied for July 19, 1904.

MONROE PORCELAIN REFRIGERATORS.

THE MONROE IS A HIGH-GRADE REFRIGERATOR BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in **one solid piece of porcelain. The corners are rounded.** There are no joints or crevices for the food to decay in.

The porcelain is white, durable, and as easily cleaned as a china dish. **The ideal house refrigerator, absolutely sanitary.** The prices here quoted **for foreign markets only** (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, Oak Exterior, $54.00

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

MONROE No. 30, Style E, Solid Porcelain Inside, Oak Exterior, $69.00

Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

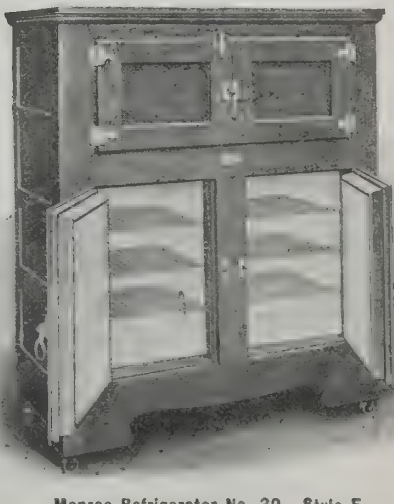
All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of **Solid Porcelain Refrigerators** made by us, mailed postpaid.

☞ Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, kindly mail us duplicate of order.

Specify "MONROE."

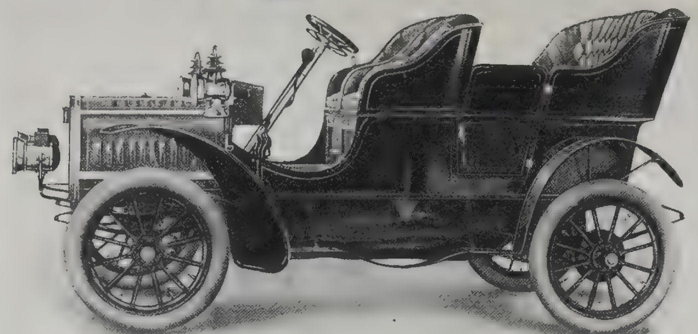
Monroe Refrigerator No. 21. Style D.



Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, LOCKLAND, OHIO, U. S. A.

Rambler



SURREY, TYPE ONE.

18 horse-power. $1,350. Immediate delivery.

Actuall use has demonstrated that this vehicle is exactly suited to the needs of persons of moderate means for a beautiful, roomy, powerful and reliable family touring car.

Its operation is both simple and natural. The ignition of the spark is entirely automatic The brakes are operated by pedals, not by levers. With the steering wheel and throttle attached to it, operable by one hand, the other hand is always free to manage the clutches by the single lever, and as many women and children have found, no confusion is possible.

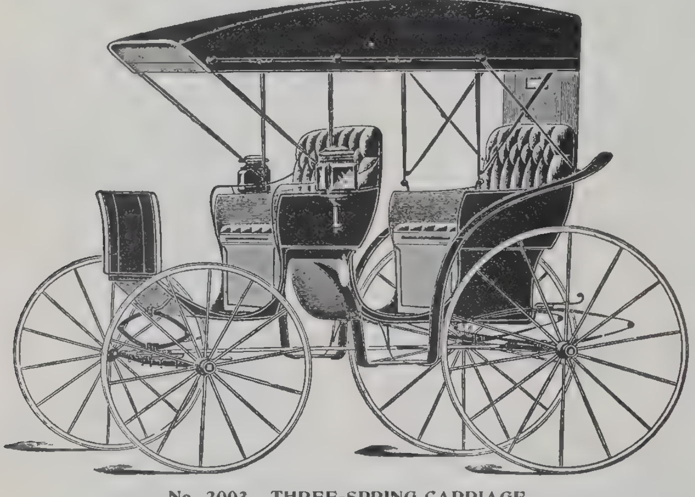
The working parts are easily inspected by removing the hinged floor and seat falls, and it is never necessary to crawl under the machine, nor to keep a mechanic to look after repairs

Other models, $750, $850, $2,000, $3,000. Packing of Surry, Type, One, and freight to New York, $62.50; to San Francisco, $167.50. We will be pleased to send a copy of our catalogue and other printed matter.

THOMAS B. JEFFERY & COMPANY,

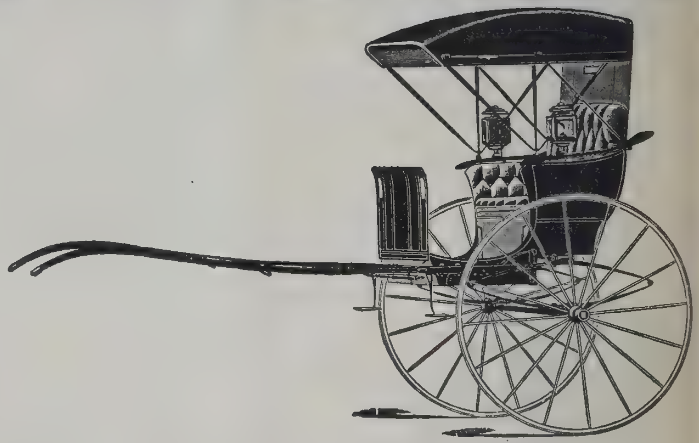
Main Office and Factory: **KENOSHA, WISCONSIN, U. S. A.**

HIGH-GRADE VEHICLES AND HARNESS

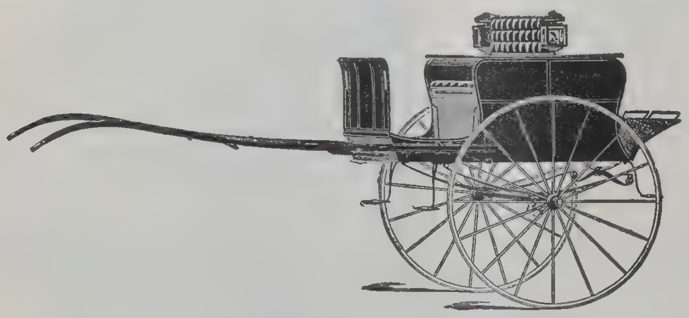


No. 2003. THREE-SPRING CARRIAGE.
This is a large, roomy, comfortable carriage, built throughout very strong and substantial.

**We
Manufacture
90
STYLES
OF
VEHICLES,
65
STYLES
OF
HARNESS.**

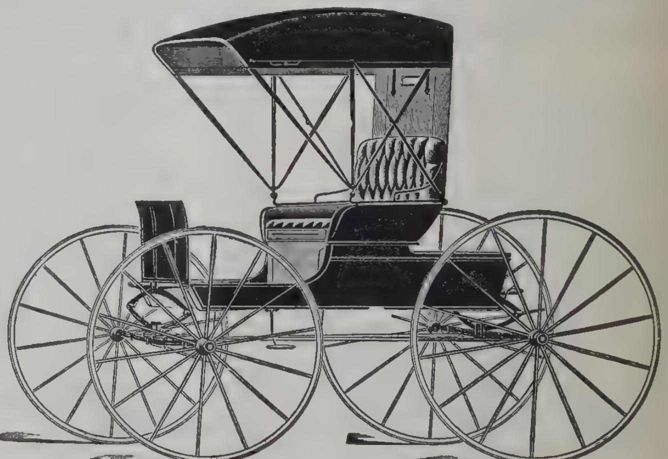


No. 10 CART WITH TOP.
No. 10 cart is a most excellent rider, free from horse motion. The con struction throughout is the best and is guaranteed to stand in any climate.



No. 15. CART FOR TWO OR FOUR PASSENGERS.
Is perfectly balanced for either two or four passengers by sliding seat forward or back. Guaranteed in every particular first class. Free from horse motion.

Our general catalogue, fully describing complete line of vehicles and harness, mailed on application. Address



No. 3001. HEAVY CORNING BUGGY.
Guaranteed to give perfect satisfaction over roughest, poorest roads.

THE COLUMBUS CARRIAGE AND HARNESS CO., Columbus, Ohio, U. S. A.

The American Exporter

[Founded by Root & Tinker, 1877],

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by Howard Lockwood & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - - Publisher
Bennett Building, New York.

Published on the 1st of each month.
Subscription, to any part of the world, $2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

COMFORTS AND CULTURE ON THE AMERICAN FARM.

THE average visitor to American shores gets but a partial idea of the way in which Americans live. Whether he be prince or commoner his observations are usually confined to urban sights and sounds almost exclusively. He is shown the great public buildings of State and nation and made familiar with the largest institutions of learning, museums, art galleries, factories and workshops, but his idea of American rural life is too often obtained from glimpses caught from the windows of flying express trains as he flits from city to city on his tour of sightseeing.

Rural life in America to-day is in sharp contrast with what it was when the genial Charles Dickens paid a visit to the United States and afterwards wrote some plain truths about what he saw there. It also shows wonderful development when compared with the conditions twenty years ago. The betterment of the surroundings of the American farmer during recent years has been even more marked than that of his city cousin. The old days of isolation and drudgery have passed away forever. Many things have contributed toward this great reformation.

Perhaps the first important step was the introduction of labor-saving machines and good, serviceable tools. The days of the sickle, the scythe and the hoe may have seemed poetical to the man who sat on the fence and dreamed, but to the man who wielded them they meant sweat and backache, as well as deterioration of mind and body. When the mower, reaper and horse hoe appeared, a new era dawned for the tiller of the soil, and the American farmer began to hold up his head, for he had time to think and read. Since that day, not so far removed as to be beyond the memory of many now living, improvements have come thick and fast. The horse and steam driven machine, with perhaps a single hand to guide, now performs the labor formerly done by a dozen men, and in a far more satisfactory manner, besides saving the housewife the drudgery of providing for the "help."

The railroads in their march across plain and through valley have also brought beneficent results to the dweller in the country, too obvious to need mention here, but the more recent steel-rail idea, made possible by electrical development, the trolley line, has had an effect which cannot be estimated upon American rural life. Since its advent a great change has come over the condition of thousands of communities by being brought in closer touch with city and town and the intellectual and social privileges offered there. Children who by reason of distance were deprived of the advantages of the academy or high school are brought near by the trolley. The older ones may now attend the lecture or concert in the neighboring city or town without the disagreeableness of a long, tedious ride over bad roads or through snow-drifts. As the result of this ease of communication, the long-existing social and intellectual dividing lines between city and country are fast being obliterated. In the summer time the city dweller goes to visit his friends on the farm. In the winter the country gentleman, for that he now is, takes on some of the manners and polish of urban life by returning the visit.

Wonderful as has been the change wrought in the condition of the American farmer through these agencies, two other factors are now working a still greater improvement in country life. These are the telephone and the rural free delivery of mails. It is only recently that the farm home telephone line was thought of. Now a half million or more are in use, and lines are being built in nearly every neighborhood.

The farmer living four or five, even ten miles from town, is thus put in touch with all the world. He knows what is going on as quickly as his city relatives. If his family needs meat, groceries or medical attendance, it no longer means a weary journey to town, but just a call by "phone." The entire neighborhood becomes as one family and thus is more closely bound together. The loneliness of old-time farm life, especially for the farmer's wife and family, ceases when the telephone wire goes up.

In innumerable ways the telephone is proving a great boon to the farmer. It reduces his operating expenses, helps him to profitably market his produce, increases a spirit of friendliness, excites his interest in affairs of the world at large—in short, it makes the farm home of America one of the most desirable spots in the world.

Following closely after the adoption of the telephone for rural-neighborhood service came the rural free delivery of mail. This service was not started in the United States until 1897. Now more than 13,000,000 country residents are enjoying its benefits and new routes are being established at the rate of 800 each month. Instead of getting his mail once or twice a week by journeying several miles after it, the American farmer now has it delivered daily at his very door. As a result he takes a daily paper and a great abundance of magazines and periodicals, and is as well posted on current events as the man in town. A visit to the average rural home in the United States reveals luxury and comfort unknown years ago—unknown to-day in lands across the sea. There will be found a piano or organ, plenty of good books, factory-woven floor coverings, upholstered furniture, pictures and surroundings not far behind the city home, with the added advantages of plenty of room and sunlight. Instead of using, as in the olden time, the same wagon to carry crops to market and his family to town, the average American farmer to-day rides in as fine a carriage and drives as good horses as the banker or the judge, and dresses his wife and daughter quite as becomingly.

This difference of comfort, culture and general well-being throughout the domain of the United States is without a parallel and we have drawn this picture for the benefit of those who in their visits to the New World fail to familiarize themselves with one of the most important elements of national greatness. This is no fancy sketch, but a plain statement of existing conditions—conditions to which THE AMERICAN EXPORTER is proud to call attention and which it is asserted without fear of contradiction exist nowhere else on the globe.

NEW YORK TO HONOR HUDSON.

A MOVEMENT is on foot among the public-spirited citizens of New York for a great celebration to mark the three hundredth anniversary of the discovery by Hendrik Hudson of the river which bears his name. The bold Dutch navigator sailed up the beautiful Hudson in 1609. His tiny wind-propelled craft was the forerunner of the mighty tide of commerce which now sweeps the waters about the great metropolis of the New World, and New York City is his greatest monument. The tri-centennial of Hudson's discovery is four years hence, but the time is not too long in which to prepare for a fitting commemoration of one of the most important events in the world's history.

AN American scientist has succeeded in training microbes to help the plants grow. Even the American microbe must become a worker. There is no room for drones in this country.

REVISED VERSION OF THE MONROE DOCTRINE.

IN the agreement with Santo Domingo by which the American Government is to exercise a sort of receivership over the harassed and distracted little island republic a large number of European nations are interested in a pecuniary sense, and because of the possible effect that a United States protectorate over Dominica may have in the years to come. The Monroe Doctrine in its original interpretation is thoroughly understood by the Powers and has been generally accepted by them until it has come to be almost regarded as international law. This extension, so to speak, of an American doctrine laid down in 1823 may not have been contemplated by its author, but it certainly follows as a natural result of changed conditions and is in no wise a violation of principles. If America insists on the principle of "hands off," if she says to the Old World Powers, "You shall not occupy territory for the purpose of exacting payment of debts or to redress real or fancied wrongs," it naturally follows that she herself must provide some method of redress and adjustment. This is the situation in the Santo Domingo affair. This is what some have been pleased to style the "new version" of the Monroe Doctrine.

No rule of action, national or individual, can be maintained without assuming the weight of responsibility involved thereby. America has no intention of abandoning a principle so vital to her national life and well-being as the Monroe Doctrine, and therefore when occasion requires must be prepared to meet the inevitable results of upholding it. That occasion has just been presented, and the responsibility is not shirked. Creditor nations have for a long time been trying to secure the payment of their claims at the hands of the Dominican Government. Wearied by long and fruitless attempts, the Powers became insistent and made threats. In the midst of her troubles the financially embarrassed insular republic turned to the United States for succor. A convention was entered into in which the United States agreed to assume control for a time of the island's finances and adjust the payment of her debts, at the same time agreeing to respect the integrity of the Dominican Government. This is the history of the episode in brief.

That the step taken will be far-reaching in its effects, no one who has thoroughly studied the situation can doubt. It is not unlikely to lead to other temporary protectorates, for there are several other small republics to the south of Uncle Sam's domains which have a faculty of running in debt to European Powers and also of trying to evade a settlement. The United States cannot afford to let the creditor nation land its armies to enforce payment, because a foothold once gained might not be easily relinquished when the cause for the movement had been removed, but would become a menace to American interests. Neither can the United States take the ground of aiding the debtor government to avoid the settlement of her just obligations. The United States must protect and at the same time see that justice is meted out to both parties.

Such in plain terms is the "revised version" of the Monroe Doctrine. It is a revitalization of this great principle to meet present-day conditions. This concrete application of the principle was recently set forth by President Roosevelt and later strengthened by so good an American authority as former Secretary of War Root, in the following words:

"And if we are to maintain this doctrine, which is vital to our national life and its safety, we must at this time say to the Powers of the world, 'You shall not push your remedies for wrong against those Republics to the point of occupying their territory,' we are bound to say that, whenever that wrong cannot be otherwise redressed, we ourselves will see that it is redressed."

The receivership of the United States in Santo Domingo will probably last for some time and the task imposed is not an easy one. The total foreign debt of this insular government is more than $30,000,000 and only about one-half of the government's annual receipts can be diverted from necessary expenses to the payment of claims.

This action of the United States ought to be very gratifying to the Powers of Europe, for it saves them a world of trouble and insures payment of their legal claims. At the same time there may come to those Powers which have harbored thoughts of possible acquisition of territory in Latin America a realizing sense that this version of the Monroe Doctrine forever sets at rest such ambitions. This action should afford satisfaction to the minor American republics, for it affords a means of escape from difficulties beyond their power to adjust and yet does not menace their integrity. The United States does not contemplate, indeed, has no desire to annex any portion of Latin America. She has taken this step in Santo Domingo solely in the interest of justice and fair play.

Should other protectorates be made necessary in the years to come, they will be undertaken in the same generous spirit.

WITH BANDS OF STEEL.

THE demand for finished steel products in the United States since the beginning of the year is little short of marvelous. The year 1904 closed with bright prospects, but the most sanguine steel magnate never dreamed that within the brief space of two months every steel plant in the country would be overwhelmed with orders, and in spite of night and day operation at utmost capacity, have bookings for six months ahead, with no diminution in sight of the inflow of orders. Yet such is the situation to-day and some of the larger concerns are beginning to prepare for increased capacity.

Prominent among these is the Carnegie Steel Company which has just completed arrangements for an addition to its already large plant at Homestead, Pa., of twelve fifty-ton open-hearth furnaces. This will mean an increased capacity of 1,200 tons per day. This plant is now rolling an immense tonnage of steel plates to fill foreign orders and Japan is said to be one of the heaviest customers.

What is true of the Carnegie steel plant is practically true of the 400 others in America. One Western steel company has orders for nearly half a million tons of steel rails on its books and another announces that it cannot catch up with its bookings for at least four months. Every available mill of the United States Steel Corporation is running at full capacity and a member of the company recently predicted that the net earnings of the corporation for the present year would be fully $100,000,000.

While the structural shapes, billets, blooms and wire form no mean proportion of America's annual steel exports of 1,250,000 gross tons, the steel rail is easily the leader, over half a million tons being the last year's record, a record which is likely to be put completely in the shade in 1905. The magnitude of the steel-rail industry in the United States is not generally understood. American railroads annually require two million tons of rails for repair purposes alone. New construction also takes an enormous tonnage. Added to this steady domestic demand comes the ever increasing inquiry from the railway builders of the world outside. Russia, China, Japan, South Africa, British America, Mexico, Latin America, Oceania and other countries are more and more looking to American steel rail manufacturers for their supply. Railroad construction throughout the world is being planned along stupendous lines.

Truly the nations are being bound together by bands of steel, bands which are largely the product of American mines, forged in American workshops by American workingmen. Through forest, across fertile plain and arid desert, through mountain tunnel, over and beneath city street, these bands of steel are stretching on and still on uniting all lands and all peoples and bringing nearer the era of good will and universal brotherhood.

THE LATEST TRUST INVESTIGATION.

THE Standard Oil Company, the most powerful corporation in the United States, is to be investigated by order of President Roosevelt. This action is the result of a fight against the oil trust in the State of Kansas, where a law has just been enacted for the creation of a State refinery. The outcome of this experiment and also of the Government investigation will be watched with almost world-wide interest because the power of the Standard Oil Company in universal in extent.

PARCELS-POST AGREEMENTS.

ONE of the most pressing needs of the buyer of American manufactures is an adequate parcels post, and that satisfactory agreements are supposed to have been made with England and France will be pleasing news in every country to prospective purchasers of American goods. It is probable that if the operation of the agreements mentioned is satisfactory similar conventions will be made with other nations. The agreements, which are supposed to have been already negotiated, although no official information to that effect has been received, do not require the approval of the United States Senate, and therein lies the main hope of the friends of the parcels post that the compacts, if negotiated, will become effective. All that is required is the signature of the Postmaster-General for the President and of the British and French Ambassadors for their respective governments to settle the question.

Until now it has been possible to send only samples to England and France as "merchandise," and at less than letter rates. Under the new arrangement, which is almost certain to become operative, it will be possible to transmit packages of all sorts and all weights, up to four pounds and six ounces, at the remarkably low rate of 12 cents per pound. Even with the maximum weight limit at so low a point as that named, it seems probable that the volume of business transacted between America and England and France, under the new arrangements, will be considerably augmented.

The fixing of the maximum weight at four pounds and six ounces has caused some comment and it has been asked why the limit was not fixed at four pounds, the maximum within the limits of the United States. In reply it is pointed out that the weight agreed upon in these latest international arrangements accords with the metric standard that prevails in other treaties to which the United States is a party, and the American Government did not want to have too many standards. Thus every extension of international business, it is pointed out, is a step toward the unification of weights and measures. The maximum weight, small as it is, is large enough to permit the transmission of many samples and of many full-size articles of small dimensions.

An adequate parcels-post agreement between America and other countries would make it possible for American manufacturers and exporters to send samples to every part of the earth in the shortest time. The result would be a prompt placing of orders and a considerable increase in America's foreign trade. Buyers like to see what they are going to pay for and a parcels post would make it possible to deliver to a man, wherever he might be, the samples that he desired and upon which his order might depend. That is one reason why parcels-post arrangements receive the cordial and earnest support of American merchants. The post-office and executive departments of the United States Government can do nothing that would so greatly advance the interests of the American exporter as to promptly institute the parcels post and assiduously endeavor to extend its field.

EXPORT FIGURES TO BE PROUD OF.

GRATIFYING in the extreme to every American and interesting to all the world are the revelations regarding the export trade of the United States made in the recently completed report of the Government statistics as Washington. The returns for the year 1904 are somewhat tardy, but the figures are fascinating and instructive.

For the first time in American history, the exports of manufactures for the year ending January 31, 1904, passed the half-billion-dollar mark, exceeding the preceding year's record in value by more than $81,000,000, a greater gain than in any preceding year. This wonderful expansion of America's export trade is not the result of forcing. No unusual means were put forth during the year to capture the world's markets. On the other hand, if we may believe the consuls of the United States, whose complaints are constant and vigorous, this growth has been obtained in spite of a failure in many cases on the part of American manufacturers to consult the desires and tastes of the foreign buyer and consumer. It is believed that when the recently adopted plan of sending "commercial missionaries" abroad to study the conditions and requirements of foreign markets is carried out, the United States will be able to double, perhaps quadruple, its present exportation of manufactured goods.

In looking over the report for the past year we find that fully three-fourths of the gain in America's export of manufactures above referred to was made by three industries—copper, iron and steel, and cotton. The gain of $31,000,000 in exports of copper ingots, bars and other manufactures of that metal is the trade phenomenon of the year. The figures for iron and steel are not far behind those for copper and will be generally considered of greater import because of the fact that this industry is usually looked upon as a sort of indicator of business conditions in general. The total value of American iron and steel exports for 1904 was nearly $130,000,000, and by far the largest item in the list was that of steel rails. This record of American steel and iron manufactures is certainly one to be proud of, and the present year bids fair to make even a better showing.

The new export record established by cotton in 1904 was not so phenomenal as that of the leading metals, but it was worthy of note. A gain of $6,000,000 in a year is not to be despised. American manufacturers of leather goods and refiners of mineral oils also find cause for congratulation in the export figures for 1904.

In contemplating these figures, $502,734,729, representing the total value of American manufactured goods sold to the world outside in one year, there comes to us the question, How long and to what extent will this growth of export trade continue? The total annual output of American mills and factories to-day is valued at more than $15,000,000,000, and in view of the comparatively undeveloped condition of vast areas of the country, American manufactures may be said to be still in their infancy. Even with the present equipment of shop and factory the output could be largely increased under a stimulating demand. Domestic consumption of American manufactures is not likely to keep pace with their production. It follows, then, that an enormous surplus must find an export market during the next quarter of a century, or America's prosperity will receive a serious setback. We have no fear of the latter alternative.

Within the next ten years America's export trade of manufactures even at the present ratio of increase will reach the enormous sum of over one and a half billion dollars, and there is every reason to believe that the present ratio will be far exceeded.

In the realm of agriculture and mining the export figures for the year just closed are no less impressive than are those for manufactured goods.

From the farms of America there went abroad during 1904 nearly $900,000,000 worth of products, about double the amount exported in 1885, while from the mines of the country $50,000,000 worth of treasure was sent to other lands, a gain of 66 per cent. in twenty years. Truly, Americans have reason to be proud of the record made and to look forward hopefully for the present year's returns.

A SETBACK TO ARBITRATION.

IN the February number of THE AMERICAN EXPORTER we referred to the arbitration agreements which had been negotiated by the State Department at Washington with seven European Powers, and commented upon the fact that they marked a long step forward in international diplomacy. At that time these treaties were before the United States Senate, the treaty ratifying power under the constitution.

As it now appears, the negotiations of Secretary of State Hay with the Powers to establish the much-to-be desired principle of arbitration have been fruitless. The Senate adopted the conventions but by substitution of the word "agreement" for "treaty" has in the eyes of the State Department and President Roosevelt made them of no value and meaningless. By this change of wording the Senate has practically provided that no specific question of international dispute shall be submitted to arbitration until a special treaty has been passed upon by that body. This action practically leaves the matter just as it has stood from the foundation of the American Government. In fact, the President regards it as "a step backward."

It is greatly to be regretted that the question of prerogatives has been allowed to bring to naught so important a movement and one which promised so much to the world. The friends of arbitration in America eagerly hope that a way out of the difficulty may yet be found.

That Secretary Hay will not present these "agreements" for international comity to the Powers in their amended form is tolerably certain. A treaty by which the American Government agrees to make a treaty with the Powers is superfluous, nay more, it seems to us absurd. In view of the fact that the movement for international arbitration really had its origin in the United States the abandonment of these conventions is humiliating. The principle, however, is not dead and already the friends of the movement are planning to make it an accomplished fact. The withdrawal of these "agreements," identical in form, with England, France, Germany, Italy, Switzerland, Spain and Sweden and the checking of negotiations for similar conventions with other Powers, under way at the time, does not mean that America is averse to a settlement of differences by arbitration. On the contrary, the desire for peace and friendliness with all the world was never stronger in the American mind. Senatorial amendment or rejection may for a little time hinder the onward march of the evangel of universal peace and brotherhood; differences of opinion as to authority and phraseology may cause a slight setback in the general and irresistible trend of human destiny, but in the end the principle of arbitration will triumph and America may be depended upon to do her part toward securing the glorious consummation.

AN INTERNATIONAL CONTRAST.

IN looking over the world at the beginning of another month and comparing the conditions existing abroad with those prevailing at home, THE AMERICAN EXPORTER can but entertain feelings of pride and satisfaction. Over some of the Old World Governments hang angry political and industrial storm-clouds which threaten to overthrow existing rule. Over others the clouds are less portentous, though sufficiently dark to excite some apprehension.

Russia's troubles are most serious. The long-pent-up fury of the masses, resulting from years of autocratic rule, has at last burst into open flame, carrying riot, arson and bloodshed in its train. The outcome of Russia's industrial and political upheaval cannot now be predicted. The Czar appears to be powerless and entirely under control of advisers who care little for the rights of the common people. With war in her provinces and rebellion at home the condition of Russia is certainly alarming.

In Germany a widespread labor disturbance has prevailed. The strike of Teutonic coal mine workers, while not resulting in any serious violation of law, has, nevertheless, greatly disturbed Emperor William's domains and paralyzed for a time one of the empire's leading industries. The Turkish Sultan, always in trouble, seems bent upon putting all his European subjects who are not Moslems under the control of inhuman governors, who resort to bloodthirsty methods to keep in power. France has just passed through a ministerial crisis which was preceded by unusually stormy scenes in the general assembly. Austria, too, has her troubles and Emperor Francis Joseph is deeply concerned over the fact that his grip on affairs seems to be growing more uncertain. In Italy the situation is more quiet, but her discontented sons continue to rush across the Atlantic to America at an alarming rate, seeking to better their condition.

Turning now to America, what a contrast! From one end to to the other of the great republic, peace, plenty and contentment prevail. All lines of industry are working at their fullest capacity to supply the demands, and in many lines of manufacture orders are months behind fulfilment. Especially is this true of the iron and steel industry. The blast furnaces of America are now producing at the rate of 1,800,000 tons a month and the steel mills exceeded all previous records during the months of January and February, yet at the same time continued to fall behind in their deliveries. In the face of all this loom up large foreign battleship orders which it may take years to execute. In the textile industry a similar condition prevails. Difficulties have been adjusted and looms and spindles are humming, while manufacturers of farm implements and machinery are rejoicing over foreign as well as domestic orders of unusual proportions.

From mine and farm as well as from workshop and factory come reports of brisk demands and profitable employment. Americans are too busy supplying the ever-increasing necessities and demands of the world around them to think of anything but the business in hand.

KING COTTON NOT DETHRONED IN AMERICA.

THE world's cotton supply is chiefly confined to three countries, the United States, India and Egypt. The supply from the United States, which easily overshadows all others, comes from the comparatively small area of that great republic that is known as the Southern States. There, in the year just passed, twelve million bales of this king of agricultural products were produced. During the same period British India grew two million bales and Egypt about half as many. India, America's greatest competitor, has made considerable progress in the manufacture of cotton goods in recent years, but she imports from America more than one-half of the raw material, besides nearly a hundred million dollars' worth of cotton goods from America and England.

A comparison of the figures of the cotton industry of India as shown in an official report by the British Board of Trade with those of the United States shows that the number of spindles in the United States in 1903-4 was 22,850,000, an increase in ten years of 7,150,000 spindles, while the number of spindles in India was 5,213,344, an increase for the same period of 1,673,663 spindles. The number of spindles in the United States is thus about four times as great as that of India, while the rate of increase in the number of spindles in operation has averaged in the case of the United States 715,000 per annum, and in the case of India 167,000 per annum during the past decade.

This comparison is made for the purpose of putting a quietus on wild statements circulated during the past few weeks, that one cause for the depression of the cotton market in America was the rapid development of the industry in other cotton-producing countries. The business of cotton growing in the Southern portion of America, owing to favorable season and unusually large acreage, has received a slight setback, but foreign production does not figure in the case to any appreciable extent.

The talk of reduction of acreage and the wild stories of the burning of cotton by the disheartened growers in America amount to very little. There may be a slight decrease in the area planted this season, but the cotton-growing industry in America is not permanently checked and the output to-day is small compared to what it is destined to be in the years to come. Millions of acres of good cotton-growing land yet lie untilled in this "land of cotton." Nowhere else in the world can the staple be grown so well. Consumers on the Continent of Europe and in England are likely to find after a few more years of experiment in trying to develop the cotton-growing industry in Africa and elsewhere that the most profitable place in the world in which to raise cotton is in America, the favorite home of the plant and where the quality of the fiber is unexcelled. Then will come an expansion of King Cotton's realm and power that will cause present figures and achievements to appear insignificant.

Another phase of the question that is worthy of consideration is the rapidly increasing number of cotton-manufacturing plants throughout the cotton-growing sections of the United States. The amount of raw cotton for Old World consumption must shortly be largely curtailed by the demand of the mills at home unless the growers keep pace with the changing conditions. This they are bound to do. America has the soil, the climate, the men capable of producing the best cotton and all the cotton needed in the world and she will not see her "king" dethroned.

RELATIVE to the increasing demand from all quarters of the globe for American hardware goods, it can be truthfully said that the sound of the American hammer is heard round the world.

AFTER THE WAR.

THE announcement was made and denied from St. Petersburg during February that peace was under consideration. The report, of unknown origin, but presumably from some official high in the Russian service, went so far as to give the conditions upon which Russia was to make peace. The conditions as published were that Korea was to be placed under Japanese suzerainty, Port Arthur and the Liaotung Peninsula were to be ceded to Japan, Vladivostok was to be declared a neutral port with an open door, the Eastern Chinese Railroad was to be neutralized and placed under an international administration, and Manchuria, as far north as Harbin, was to be restored as an integral part of the Chinese Empire.

It is not the desire of THE AMERICAN EXPORTER to comment upon the authenticity of the announcement further than to say that it appeared to be tentative and was undoubtedly published in order to unofficially ascertain the views of the various Powers and to learn the line along which peace proposals might be made, either now or at some future time.

The question with which we are most concerned at this time regards the progress of affairs after the close of hostilities, if the conditions of peace are as stated in the dispatch from St. Petersburg. Assuming that those conditions will be as set forth it is seen that Manchuria will be restored to China and the door to the great and fertile valley that extends northward from New Chwang to Harbin and beyond will be opened as far as the Russian border to the commerce of the world. The two provinces between which that valley is divided contain many rich cities and have a population of fully fifteen millions.

We believe that the war will be followed in that section of the Chinese Empire by a great business awakening and that there will be for years to come a demand for goods of all kinds that are suited to the climate. It is probable that in that section Japan, America and Great Britain will be dominant and that the next decade will witness there a stupendous commercial and industrial development that will be of enormous value to the countries mentioned.

The part America may play in the exploitation of the New Chwang hinterland is partially outlined in remarks recently made by S. Uchida, Consul-General of Japan in New York. He said: "As soon as the war is over Japan has to face a new struggle—international competition in the markets of our neighboring countries, as a result of their being thrown open to the world. In this struggle it is our earnest hope to have Americans as our partners instead of rivals, as the United States is the traditional friend of our country, whose friendship we can rely upon with absolute faith. The combination of Americans and Japanese in the business enterprises of the Far East will enable us to secure the lion's share of business in those quarters of the globe."

Passing to the consideration of other portions of the proposed conditions it will be noted that there are two factors present that were not generally considered possible at the commencement of the war—Japan will have possession of Port Arthur, the Liaotung Peninsula and of Korea. We said last month that Port Arthur should be rebuilt, not as a mighty fortress bristling with guns, but as a great commercial rendezvous to serve as a peaceful clearing-house for the splendid traffic between the Occident and the Orient, and that to attain her greatest triumph Japan had only to present Port Arthur to a joint convention of the maritime Powers as a pledge of concord and good-will, to be governed as an open port for the ships of all countries and an emporium for the commerce of the world. We have had no reason to change that opinion.

Assuming that Japan is to urge that Vladivostok be declared a neutral port with the open-door system, it must be conceded that Japan's position in that contention will be greatly weakened in the eyes of the Powers if she does not on her part consent to neutralize Port Arthur. Whether to insist that Vladivostok be neutralized would be just to Russia is open to serious question. It would deprive Russia of her one outlet upon the Pacific Ocean for the Trans-Siberian Railroad; it would greatly delay the development of northeastern Asia, and would not only injure Russia but would affect the claims of civilization. It seems to THE AMERICAN EXPORTER that a guarantee on the part of Russia that she would institute and maintain the open door at Vladivostok would be sufficient. Moreover, as it is a part of the commercial policy of Japan to maintain the open door, she will likely announce that policy as affecting Port Arthur. If she does it is likely that she will insist upon it as regards Vladivostok.

In insisting upon the neutralization of the Eastern Chinese Railroad Japan would only seek to add another safeguard for the open door in Manchuria. As Japan prosecuted the war largely for the purpose of assuring the open door in Manchuria it may be taken for granted that she will leave no stone unturned to preserve the fruits of her victory.

American manufacturers and the vast shipping interests on the American shores of the Pacific are fully cognizant of the rich field that will soon be reopened to them in the Orient, and agents from American firms will be among the first to appear in Manchurian marts. With the declaration of peace the market for American goods in all parts of the New Chwang hinterland will be vastly extended, and our exports to that section of the Chinese Empire will show a marvelous increase from year to year for a generation to come. The benefits that will accrue to the people of Manchuria as well as to the American manufacturer are beyond computation at this time. It is gratifying to know that in our efforts to secure a part of the trade of that wonderful region we will be cordially aided by Japan, the nation that by an exhibition of indomitable courage and masterly strategy and the sacrifice of thousands of lives has made this expansion of American markets possible.

A SEASIDE EXPOSITION.

ON May 15, 1907, will occur the three hundredth anniversary of the first permanent English settlement in America, at Jamestown, in Virginia. It is proposed to celebrate the event with an international exposition. A beautiful location has been selected on a point of land across the bay from Norfolk, not far from the site of the old city of Jamestown. The spot is an ideal one for a World's Fair, being easily accessible by land and water, and the climate is all that could be desired. The harbor will afford a fine opportunity for naval displays which are being planned on a gigantic scale. The site is interesting from more than one historical standpoint. Twenty miles away, and easily reached, is the old Yorktown battlefield. Directly opposite is the scene of the famous Civil War naval battle between the Monitor and the Merrimac. Many of the discomforts attending former expositions will be avoided at Jamestown, especially the summer heat of cities and crowded street cars. The region is famed for its farm products and an abundance of sea food. Already the work of preparation has begun and the prospect is excellent for one of the most interesting international exhibitions in the world's history, although in many ways on a comparatively small scale.

AMERICAN HORSES FOR JAPAN.

ONE of the interesting features of the Russo-Japanese war is the fact that about the middle of February representatives of the Japanese Government signed a contract for the purchase of one hundred thousand American horses, which are to be used by the Japanese army for cavalry and transportation purposes, principally the former. The bureau of statistics of the United States Department of Agriculture estimated that on January 1, 1905, there were more than seventeen million horses within the boundaries of the United States, and in the face of those figures it may be said that the withdrawal of one hundred thousand animals will not affect values in America. At the same time, it may be pointed out that the order is of interest because it is reported to be the largest ever given for American horses for export purposes. The American animal is now recognized as being among the best, if not the best, in the world for cavalry purposes, and if a considerable number survive the war it is certain that their introduction into Japan will materially increase the demand for a high-grade horse in that empire.

OIL AS A POWER PRODUCER.

THE growing use of natural oil as a source of power is attracting the attention of engineers, manufacturers and railroad men all over the world, and much study is being given now, particularly in America, to the perfecting of devices for its economical combustion. We are accustomed to hear, from time to time, the alarmist cry that the coal supply of the world is becoming exhausted and that in a century, perhaps less, the world will have to seek other fuel. In fact, the price of coal has been steadily advancing for many years and technicians who have studied the subject agree that coal is a highly wasteful form of fuel.

None of these objections can be urged against oil. According to geologists there is no danger of the supply being exhausted for many centuries. It is clean, economical in use and approaches perfection in combustion.

For railroad use, aside from its economy to the company, it assures comfort for passengers, as there is practically an entire absence of annoying soot and smoke. Added to this is the fact that the danger to grain fields, forests and other property along railroad tracks, from flying sparks is totally eliminated.

All these advantages, with several others, apply to steamships. First, there is the saving of space, then of time consumed in supplying the cargo of fuel oil to be used on the voyage, and consequent upon the economy of time is the saving of labor and wages, and finally, the oil furnace can furnish steam about three times as quickly as the coal furnace.

These matters have been closely studied by American engineers, and consequent upon the development of the wonderfully productive oil fields in the States of Texas and California, together with a demand for an outlet for the product, has come a great activity among American inventors in originating devices for the economical and rapid consumption of the oil. That their efforts have been to a considerable degree successful is evidenced by the fact that at the port of San Francisco alone, ocean steamships, ferry-boats and tow-boats to the number of nearly one hundred and fifty have been granted licenses to burn oil. It is probable that some of the devices used will soon figure among American exports to oil-producing countries.

THE SIGNS OF PROSPERITY.

ONE of the many signs of prosperity in America is the heavy demand for pig iron which has set in since the opening of the present year. According to the latest reports there are inquiries in the market for upwards of one hundred thousand tons of the metal, with more coming in the near future. Two of the inquiries are for a total of more than sixty thousand tons, practically two-thirds of which are for the United States Steel Corporation. A large part of the new business comes from the railway equipment companies, and it is evident that a considerable amount of goods for both domestic and export trade is to be turned out during the next ten months. Besides an order for a large number of locomotives, the Pennsylvania Railroad, one of the most important American systems, has ordered twelve thousand cars, and other systems either have placed or are about to place important orders. As a consequence structural and plate mills and tube works are busy, giving employment to thousands of men.

ABOLISH THE STRIKE.

WITH the great labor disturbances of Europe fresh in our minds and those in America by no means a matter of ancient history, we pause to ask, Why not abolish the strike? Every civilized nation on the globe could with great profit to all concerned frame laws to establish a court of arbitration for all industrial disputes and then make a reference thereto of all differences between employer and employee compulsory.

The loss of life and property in the fierce Russian strike, as yet scarcely ended, was something appalling and wholly incommensurate with the slight gains secured. The great strike of the coal workers of Germany and the labor troubles in Belgium, while less sanguinary than the uprising in the Czar's dominions, caused an astounding financial loss and great deprivation, and the few concessions gained were dearly purchased. The same principle applies to American labor disturbances. The recent long and bitter struggle of textile workers was peaceful but costly, and might have been settled at the outset just as satisfactorily as after months of hardship and loss.

The more remote anthracite strike, which caused a coal famine in the United States and for a time paralyzed many industries, could have easily been adjusted in its early stages had proper means been at hand.

Is it not about time that national lawmakers in America and Europe provided a panacea for the suffering and loss entailed by strikes and lockouts by establishing a system of compulsory arbitration? This step would mean to both capitalist and laborer a saving beyond computation and to the public at large much comfort.

FOR FREE HIDES.

THE movement in America in favor of tariff revision and the modification or removal of duties on raw materials, received an impetus at the meeting of the National Association of Boot and Shoe Manufacturers of the United States, held in New York on February 23d. The Association was only organized the day before, and one of the first matters of business to be transacted was the adoption of resolutions calling upon Congress to remove the tariff on hides and place them on the free list of articles that may be imported into America. The resolutions set forth that the maintenance of the present tariff is an unjust discrimination and is not based upon the policy of protecting home industries. The resolutions say that the increased cost of materials and labor requires an increased price for leather products, that the removal of the duty on hides and placing them upon the free list will greatly lessen the necessity for an increase in the price of the product and will accomplish just and satisfactory economic results. The Association will urge other trades that use leather materials to take like action.

The importance of the action by the Association is seen in the fact that the resolutions were voted upon by two hundred delegates representing the boot and shoe manufacturing industry in all parts of America. The demand for free hides is insistent not only among boot and shoe makers, but among carriage and harness manufacturers and all persons who are interested in making anything of which leather forms a part. That a removal of the duty on hides will have an important effect on the export trade in American boots and shoes, carriages, harness and other products is evident at a glance. The cost of manufacture will be lessened, and it will be possible to lay down the finished product in any port of the world at a lower price than is possible under present conditions.

Oil for the Japanese.

"IT is an ill wind that blows nobody good," says the old adage. This is now illustrated on a large scale. Owing to the war in the Far East Japan is looking to America for petroleum. Within the next two months more than 10,000,000 gallons of refined petroleum will be shipped from oil works in the United States to that country. Heretofore much of the oil used in Japan has been produced by the Russian oil fields bordering the Black and the Caspian seas, but that source of supply has been cut off by the war in the Far East, and the Standard Oil Company is reaping the benefit. Ten vessels have already been chartered and more are being engaged as rapidly as possible. The shipment will be made from the port of Philadelphia, and it is expected the oil exports from that point in 1905 will exceed those of any other year in history. They already amount to 41,844,949 gallons, an increase of more than 7,000,000 gallons in excess of the quantity shipped in the corresponding period last year. The shipments are heavier not only to ports in Japan, but also to those in many other countries, due in almost every instance to the troubles in Russia and Manchuria.

United States Steel in Mexico.—Prominent officials of the United States Steel Company have recently visited Mexico, and it is announced on good authority that a concession has been asked from the Mexican Government for the establishment of a large iron and steel plant at San Luis Potosi, to compete with the Monterey foundry. The Monterey plant is said to have cost $10,000,000.

The American Typewriter.

IT is to the telegraph, telephone and typewriter, more than to anything else, perhaps—unless we except the improvements in methods of transportation—that the wonderful commercial development of the United States and other countries within the last forty years is due. Comparatively few people now living can remember the days when there was no telegraph, and the telephone and typewriter seem like old friends. Yet the pioneer typewriter operator, Mrs. M. A. Saunders, of New York, had her first glimpse of the machine on January 17, 1875, and she is still at work for a large insurance company in that city. The anniversary of that date was celebrated by the presentation to Mrs. Saunders of a handsome gold watch, which was inscribed: "1875-1905. To the pioneer typewriter operator. From the pioneer manufacturer."

That anniversary was a notable event, because within the cycle of thirty years American typewriters, the product of American brains and American skill, had gone around the world, into the markets of every country, and in competition with machines from every manufacturing nation, in all kinds of work, under all conceivable circumstances, had demonstrated their worth. To-day American typewriters are found in practically every enterprising American business house and in almost every town and city throughout the civilized world, as well as on the islands of every ocean, and yet the manufacturers say that the industry is still in its early infancy. Men of high mechanical skill are constantly employed as inventors by the various manufacturing companies, and they have but one duty to perform—to improve the typewriter and make it more perfect.

The first attempt to produce a typewriter was made, according to records of the British Patent-Office, early in the eighteenth century, and on January 7, 1714, a patent for such a machine was granted to Henry Mill, an English engineer, for a machine that was intended to do writing. The first American effort to produce such a machine, so far as the records show, was made by William Austin Burt, of Detroit, Michigan, who secured in 1829 the first American patent ever issued for a typewriter. There is no reason to doubt that to Mr. Burt is due the honor of being the inventor of the first American typewriter. Many other attempts to produce a commercially useful machine were made, but without success, for more than sixty years.

During the winter of 1866-67 C. Latham Sholes and Samuel W. Soule, both of Milwaukee, Wis. (U. S. A.), were at work together in developing a certain machine. They became acquainted with Carlos Glidden, of the State of Ohio, who was also engaged in developing an invention. The three inventors were in each other's company most of the time, and in the course of a conversation one day Mr. Glidden, in speaking of the mechanism the others were at work upon, asked why a machine could not be invented that would write letters and words. Nothing more was said until later in 1867, when the matter was again presented to Mr. Sholes. The idea strongly appealed to his imaginative temperament. He invited Mr. Glidden to unite with him in the enterprise and they were subsequently joined by Mr. Soule. Each made suggestions, and by September, 1867, the first machine constructed by the trio was completed. It was a crude affair, but one of the letters written on it was sent to James Densmore, of Meadville, Pa. (U. S. A.), who was filled with enthusiasm on the subject, and who purchased a substantial interest in the undertaking without having so much as seen the machine.

From the time Mr. Densmore first saw the typewriter in March, 1868, he constantly urged the necessity of improvement. Messrs. Soule and Glidden withdrew, but under the direction of Mr. Densmore Mr. Sholes kept at work, making model after model, until 1873, when the machine was deemed sufficiently perfect to be placed in the hands of a manufacturer with a view to having it put on the market. Mr. Densmore enlisted the services of G. W. N. Yost, a man of great inventive ability, of ready wit and fluent tongue, and together they visited a large manufacturing concern at Ilion, New York State, where the machines are still being made. The typewriter was not yet mechanically perfect, and more improvements were made upon it, until during the summer of 1874 a machine was produced that was pronounced fit for public use.

The first typewriters sold for general use were very different in appearance from the compact and well-constructed machines of to-day, although the fundamental principles of the early machine still survive, because nothing of real utility has yet been found to supersede them. Nevertheless, one of those first machines would be a curiosity and an object of derision to-day. The connections between the keys and the type bars were wires and were constantly breaking, and a new line was started by pressing a pedal with one's foot. But those early machines, crude and cumbersome though they were, were vastly superior to the pen and filled a void in the world's economy.

Then came the effort to sell them. A consignment of the machines was forwarded to New York, and on January 16, 1875, an advertisement for a bright, educated woman to take a pleasant and remunerative position was answered by Mrs. Saunders. The next day she was given the first position ever held by either a man or a woman as a typewriter operator. And it was in commemoration of that event that she was presented in January last with the gold watch mentioned.

For several years only capital letters were used on typewriters and the machines were designed to print only the English language. To-day not only do the machines use both capitals and small letters, but every language spoken in Europe is utilized, together with Armenian, Burmese and other tongues. It is possible to get one machine on which letters may be written in English, French, German and Spanish and other combinations, including one that will print both English and Russian capitals and small letters. Not only are improvements going on constantly in the mechanical departments of typewriter factories, but in the language departments as well, in an effort to extend the use of the machines to the widest possible degree. In truth it can be said that the typewriter is in its infancy, and the day of the fullest development of the machine is hidden in the distant future.

American Glazed Kid.

THE center of the hide industry in America, as well as the world, is at Philadelphia. It is an industry of no mean importance, though somewhat overshadowed by the textile manufactures of the city, with an annual output of over $100,000,000. The goatskin tanning industry in Philadelphia had its beginning in early Colonial times and has steadily grown until the present day, and Philadelphia can now boast of the largest kid leather plants in the world, several claiming a capacity of 2,500 dozen skins a day, three or four claiming a capacity of 1,000 dozen skins a day, probably twelve with a capacity of 500 dozen skins a day, and twenty-five or thirty with a capacity ranging from 75 to 200 dozen a day.

The product of these factories is known commercially at the present time as glazed kid. Years ago the leather was sent out under the various names of "brush kid," "French morocco" and "pebble morocco." These brands, because of the method employed in tanning, were not soft and pliable like the goods made at the present time, and, being inferior in this respect to the genuine French kid, made slow headway against the foreign competitor. American push and ingenuity are not easily discouraged, however, and gradually improvements in the manner of treating the skins were evolved until superiority was obtained in the importation of kid leathers from France to America entirely. In addition to softness, pliability and good wearing qualities, the American glazed kid is virtually impervious to water and may even be placed in boiling water without injury. The attainment of this important feature cost years of experiment and the loss of several fortunes. Twenty years ago France was furnishing the United States with 80,000 dozen finished kidskins annually. To-day American glazed kid is known the world over and finds an enormous market not only in England, Germany, Australia and a score of other countries, but in France, the home of the industry.

Philadelphia manufacturers produce about 60 per cent. of the glazed kid made in America. Wilmington, in the State of Delaware, turns out not less than 25 per cent., leaving the remainder to be divided between the cities of Newark, N. J., and Lynn, Mass. Only a small proportion of the goatskins used for the manufacture of fine kid leathers in America is furnished by that country. All parts of the world contribute to the supply. The lion's share of the raw skins comes from India. Others finish in the following order: Arabia, Africa, China, Russia and South America.

The American Exporter has not the figures at hand to show the total value of the production and exportation of this important American industry for 1904, but the latter certainly formed a very important part of the thirty-four millions which represents the value of American leather and leather goods sent abroad for that year, and the demand is a constantly increasing one.

The "American Invasion" of Korea.

ACCORDING to a report from United States Consul-General Paddock, at Seoul, railway materials form the largest item of Korea's import trade. These materials, he says, come largely from the United States. The first railway in Korea—that between Seoul and Chemulpo—was built in 1899 by an American concessionaire of American material and equipped with American rolling stock. Another line begun in 1901 is just being completed. Its length is 268 miles. Large quantities of American rails have been used in its building, and the bridge work of the line is largely of American manufacture. Like other Japanese lines in Korea, it is of standard gauge (4 feet 8½ inches), and is to be equipped with American locomotives, of which some twenty have already been delivered, five of them 110-ton express locomotives. The construction of a water-works system for Seoul—a city of 300,000 inhabitants, by the way—is to be begun this spring by a company organized in America, with a capital of $1,000,000. The water for the new system is to be taken by centrifugal pumps from the Han River, some five miles above the city. After passing a system of filtration, known as the American system of rapid mechanical filtration, the water will be pumped to the city by two high-duty triple-expansion pumping engines, each of a capacity of 5,000,000 gallons per hour. This is a work of considerable magnitude, the engineering investigations for which have covered a period of several years. The equipment will, of course, be of American manufacture.

Unusual Demand for American Cotton Goods.—Exports of cotton goods from the United States for the past three months have been unusually heavy. In December, the last month for which official Government statistics are available, nearly 62,000,000 yards of piece cottons were sent abroad, which was about three times the exportation for the corresponding month of 1903. Of this amount the Chinese Empire took the lion's share. The exports of cotton manufactures from the port of New York for January and February were phenomenally large. For the former month the increase over January, 1904, was $1,173,103, the largest in ten years. The increase at other American ports was correspondingly large.

Stupendous Railway Projects.

At least four railway projects which are of such magnitude as to almost take away one's breath are now attracting much attention and causing much comment in the world's great commercial centers. The first of these projects is the proposed Grand Trunk Pacific line that will cross Canada from the Atlantic to the Pacific; the second is the Pan-American Railroad that is destined to connect points in Canada and the United States with Argentina and intermediate countries; the third is the "Cape to Cairo" line and its northern connections, and the fourth and most pretentious is the railroad with which it is proposed to connect London with the great cities of Australia. None of these lines will be an accomplished fact for many years to come, but that they are possibilities, granting that all engineering difficulties may be overcome, is admitted.

As to the Grand Trunk Pacific Railroad a contract has already been entered into between the Canadian Government and the railroad company, under which the road, to lie several hundred miles north of the present Canadian Pacific, is to be constructed. The Eastern termini of the road will be at St. John, Halifax and Sidney, although the road proper will begin at Moncton, New Brunswick, the other places being reached by means of a railroad already in operation. From Moncton the road will run northwest through New Brunswick, close to the United States boundary, and up the south bank of the St. Lawrence to Levis, where it will cross the river over a bridge now in course of construction, to Quebec.

From the last-named city the line will turn toward the north, traversing northern Quebec and New Ontario, then bending southward to touch Winnipeg. From there it will run northward, across the prairie country and the Saskatchewan Valley and through Edmonton to the mountains. The line will cross the Rocky Mountains by way of the Pine River or Peace River passes and reach the Pacific Ocean at Fort Simpson. Branches to Dawson, Calgary, Prince Albert and other points are contemplated.

The real magnitude of the great enterprise appears when some of the figures as to distance and cost are considered. The total length of the line cannot be accurately given as yet, but estimates by engineers place the length at something over 3,500 miles and the cost at not far from $125,000,000. Despite the vast prospective outlay, the Canadians say that in view of past experiences the undertaking will pay. They say that the Canadian Pacific Railroad has paid for itself many times over, and that no sounder business enterprise exists on the continent.

The Canadians also say that ample justification is found for the construction of the road in its strategic importance. The road will materially shorten the distance between Liverpool, Yokohama and Hongkong and will pass through British territory exclusively. This may not mean much now, indeed may never be of any importance, but the present Canadian Pacific line cuts across United States territory for a few miles, and in case of international differences, the possibility of which, happily, seems very remote, it might be seriously crippled by interference from the Washington Government.

The Grand Trunk Pacific will open up to agriculture, trade and commerce an immense territory hitherto isolated, but which is known to abound in wonderfully rich timber, mineral and agricultural possibilities. Until very recently most of the country to be traversed by the new road was practically unknown, except to the hardy trapper and the Indian. The general impression was that the immense territory to be reached by the road was poor and barren; that it was a vast wilderness with a climate so forbidding that settlers would never be induced to go there in search of a home. All this has been changed by the actual facts developed by the investigations which preceded the movement for the organization of the Grand Trunk Pacific Railroad Company. It is now known that the climate is not more severe than in Manitoba, where enormous quantities of wheat are annually harvested; that the soil is as fertile as any in Canada and as well fitted for settlement, and that the lumber and mining possibilities are very great.

The Pan-American Railway is already comparatively far advanced, and when completed it will be possible to make an all-rail journey from Alaska to Patagonia, for by that time the Grand Trunk Pacific branch to Dawson will probably have been completed. In the construction of the Pan-American road lines already existing will be used, when feasible, as a part of the intercontinental system. That the work of building the connecting links is being carried on in countries south of the United States is shown by reports presented at a recent meeting of the Pan-American Railway Committee.

An official statement from the Mexican Government announces that the line from the Isthmus of Tehuantepec to the Guatemalan frontier is proceeding in accordance with the terms of the concession granted. In Central America several interoceanic lines are being completed, so as to form a through connection, and the result of these enterprises is to stimulate the north and south links. The extension of the Argentine railroads north into Bolivia is going forward under the direction of the Argentine Government. The Bolivian Congress, by a special act, has dedicated the $10,000,000 received from Brazil as territorial indemnity to railway construction. It is probable that these lines will be built by American capitalists. Engineers sent from the United States are now on the ground. Further railway building is assured to Bolivia by a recent arrangement with the Chilian Government. In Chili the tunnel under the Andes, which will provide through railway connection from Buenos Aires to Valparaiso, is under construction, and material for it is being shipped from the United States. Peru is following up the law passed by the Peruvian Congress last year, which provides for a special railroad guarantee fund. The Government has completed surveys for the lines which will close several of the links between Lake Titicaca and the existing systems. In addition to the Government work considerable private capital is now employed in Peru in railroad construction, and several important enterprises are proceeding favorably. In Ecuador work on the railroad from Guayaquil to Quito is proceeding in accordance with the terms of the Government concession. In the United States the lines that are to form a part of this great trunk system are already in operation.

Now comes the great dream of Cecil Rhodes and what will probably be his most enduring monument—the "Cape to Cairo" railroad. Assuming that only a few years will elapse before the road is completed, it is evident that when that time comes it will be followed, perhaps will, indeed, be preceded, by plans for the extension of the road by connections and new constructions to the east and north. Work on the Damascus-Mecca Railway is already advanced, and one of the first extensions eastward of the "Cape to Cairo" road will be a connection with that line. Later, if present-day dreams became future facts, there will be connections with the Russian railway systems, and by means of a line through Persia and Baluchistan with the railway systems of India. Among the possibilities of the Russian lines is a railroad through eastern Siberia and the Province of Primorsk to Behring Strait, where it has been proposed to construct a tunnel to connect with American railroads. While the completion of such a system seems, for various reasons, to be quite beyond the possibility of belief, there is another intercontinental railway that is even more imposing in its prospects—that is, the line to extend from Charing Cross, actually from Liverpool, to Melbourne and other Australian cities.

The London-Melbourne Railway line will be all-rail, except where it will cross the English Channel, the Straits of Malacca, the Straits of Sunda and a part of the Indian Ocean. At present it is possible to go by rail from London, except the water journey to Ostend, to the borders of Afghanistan, where the first break in the proposed line is found. There is no railroad as yet in the Amir's country, although several have been worked out on paper, so that when the scheme has been developed the problem of crossing Afghanistan will present no serious difficulty. It is now possible to proceed by rail from the Afghanistan frontier to Calcutta, from which point a short journey by boat down the Ganges brings the traveler to Toobkebaugra, from which place a railroad is in operation to Chittagong. Here, again, occurs a break of some 300 miles, which separate Chittagong from Mandalay, but from the latter place a line runs south as far as Rangoon in lower Burma. Lines are in contemplation through the Malay Peninsula down to Singapore. One of them, known as the Sultan of Johore's Railway, is already under construction. From Singapore to the Island of Sumatra is a short sea passage of some thirty or forty miles across the Straits of Malacca. To bring the scheme to fruition it would be necessary that a railway should be run through Sumatra to the southern extremity of the island. Then a short sea passage of thirty or forty miles would land the passenger in Java, through which a railway already runs almost to the southeast corner. Here he could take steamer and in five days arrive at Port Darwin. Then to complete the great scheme it would only be necessary to finish the line between Port Darwin, on the north coast, and Adelaide, the capital of South Australia. Mr. Darley, the consulting engineer in London of the New South Wales Government, and a well-known authority on railways, says that from Adelaide this railway already extends northward nearly to Charlotte Waters, a distance of 700 miles, while from Port Darwin southward it is constructed as far as Pine Creek, a distance of about 100 miles. The gap between is 1,000 miles long and passes through the arid and tropical interior of Australia.

That the Grand Trunk Pacific, the Pan-American and the "Cape to Cairo" railroads will be completed in the near future is assured, but it seems as if some of the proposed northern and eastern connections of the "Cape to Cairo" road and much of the "London to Melbourne" railway were chimerical. Railroads, unless built for strictly military purposes, are constructed for the purpose of developing a country and earning dividends. That a road through northeastern Siberia, especially when handicapped with even a part of the cost of a tunnel under Bering Strait, would be able to show an earning capacity is extremely doubtful. And a similar remark applies to the proposed "London to Melbourne" line. Some of the connecting links in the last-mentioned line will be closed in time without doubt, but it is doubtful if the road is completed soon enough to be of any practical service to the present generation. The story of these propositions seems almost unbelievable, but when we consider what has been done within the last fifty years these things appear to be not only possible, but very probable.

Wood Alcohol from Yellow Pine.—The State of Mississippi, in the United States, is about to have erected within its borders the only wood alcohol factory in the world to distil that product from yellow pine. Before the company decided to put up its factory it made some extensive experiments, and it was found that the product was all that could be desired. This discovery will probably lead to the establishment of a number of wood alcohol factories in the pine belt.

A Large Locomotive Output.—The Baldwin Locomotive Works, of Philadelphia, during 1904 turned out 1,453 locomotives. Of that number 1,352 were operated by steam, 94 by electricity and 7 by compressed air. Of the locomotives turned out in 1904, 286 were sent to foreign countries.

Double Engine Tractions

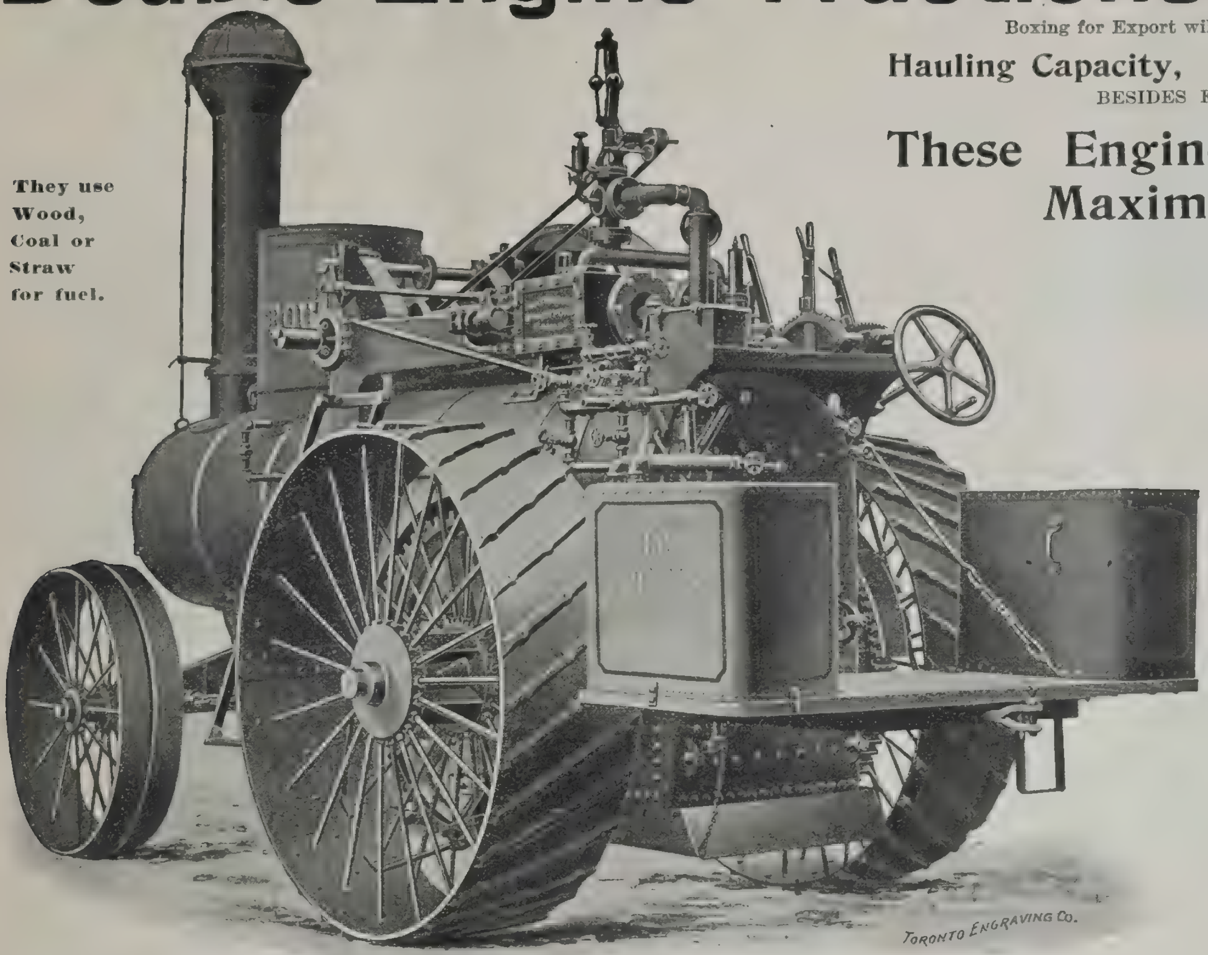
In THREE Sizes:

20 H. P. - Weight, 9⅛ Tons
25 H. P. - Weight, 10⅛ Tons
30 H. P. - Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, - 15 to 25 Tons,
BESIDES FUEL AND WATER.

They use Wood, Coal or Straw for fuel.


TORONTO ENGRAVING CO.

These Engines Always Give Maximum Power.

Where the reduced speed of a single engine will stall it, **the Double Engine walks right along.**

Wheels (22 to 28 inch face) shown are for Threshing and Plowing Tractions.

Special Wheels for Freighting.

Boilers are of ample size. With indifferent fuel under severest stress will blow off.

Engines on "belt-brake" show easily 40 to 60 per cent. increase in power over above rating.

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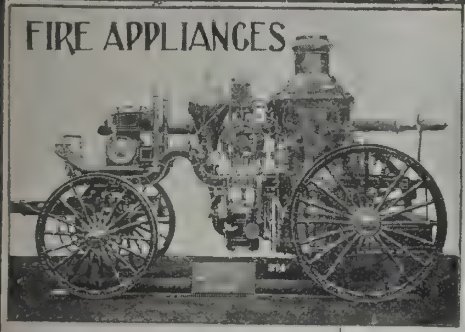
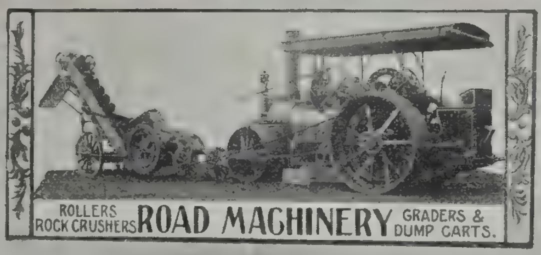
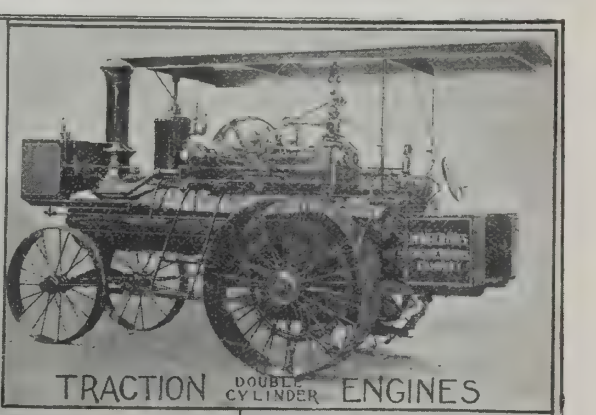
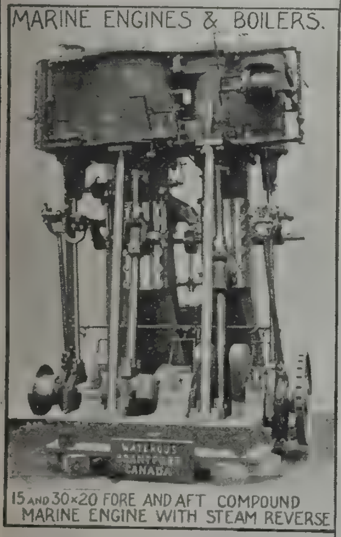






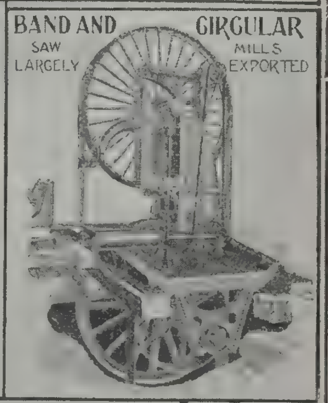


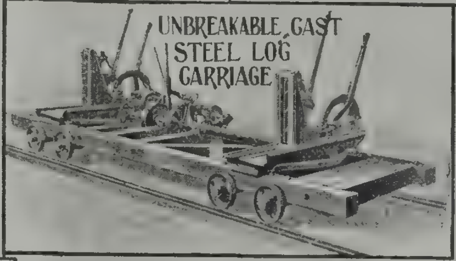
15 AND 30×20 FORE AND AFT COMPOUND MARINE ENGINE WITH STEAM REVERSE

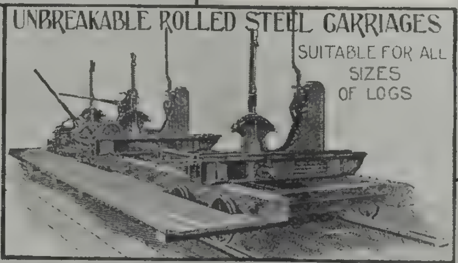
1844

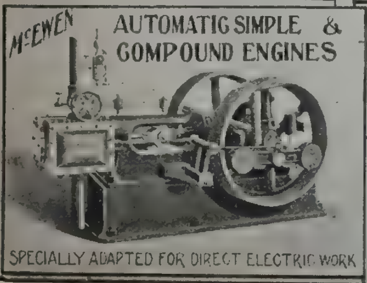
NEW FACTORY
BUILT IN 1895 SINCE THEN THE FOLLOWING EXTENSIONS HAVE BEEN MADE
MACHINE SHOP LENGTHENED 140 FT. NOW 440 x 120
BOILER SHOP 100 FT. NOW 220 x 80
MOULDING SHOP 100 FT NOW 180 x 80
BLACK SMITH SHOP 40 FT. NOW 100 x 40
WITH CORRESPONDING INCREASE IN EQUIPMENT.

1905




UNBREAKABLE CAST STEEL LOG CARRIAGE


UNBREAKABLE ROLLED STEEL CARRIAGES
SUITABLE FOR ALL SIZES OF LOGS



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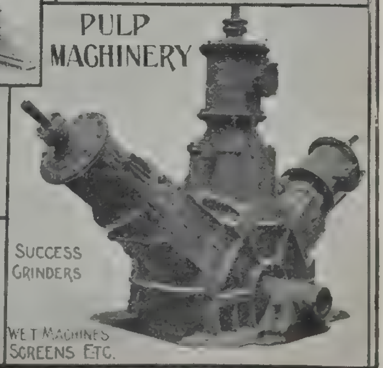

Expansion of Wireless Telegraphy.

In spite of all that has been spoken and printed by enthusiastic inventors and promoters regarding the wonderful achievements and still more wonderful possibilities of wireless communication, a strong undercurrent of doubt has pervaded the world at large that perhaps the system was not all its projectors and admirers claimed for it, and that it was not likely soon to displace the present method of telegraphic communication. Wonderful improvements have been, and are constantly being, made upon the first crude systems of wireless telegraphy, until it begins to look as if the doubters and conservatives would be obliged to revise their judgment and ideas. The marvelous advances of "wireless" are so clearly set forth in an article by Eugene P. Lyle, Jr., in the *World's Work* that The American Exporter herewith presents liberal extracts for the benefit of its readers. After discoursing on the merits and widespread adaptability of "wireless" and its great value in ocean navigation the writer says:

"During the experimental stage of wireless telegraphy the skeptical feared that it might never attain a full usefulness because of certain imperfections. The electrical impulses sent forth by a powerful station would shatter those of a feebler rival. The question was whether such 'interference' could be rendered impossible. Moreover, any operator might 'tap' his competitor's connections. It was a question whether secrecy could be obtained. A third question was: Could more than one message be taken at the same time? The inventors have been busy trying to remove the flaws. With Marconi are Edison and Prof. M. I. Pupin as technical colleagues. I asked John D. Oppe, general manager of the Marconi Company, how far they have succeeded in working out these problems. He declared that numbers of messages can now be taken simultaneously by a multiplex receiver, the details of which are as yet secret. Moreover, with recent devices the effects of atmospheric disturbance are almost entirely eliminated. The answer given me concerning competitive interference is that 'the circumstances under which a Marconi station could be rendered ineffective by a more powerful one would be not only peculiar, but extraordinary.' Immunity from 'interference' was promised for the near future. Meantime, codes should suffice for secrecy, and only malicious interference need be taken into account."

The United States Government has made extensive experiments with wireless systems, as shown by this article. The navy now has twenty-one stations, with sixty others in contemplation, and thirty-one ships are already equipped with wireless. The army has a large number of stations for the use of the Signal Corps. The system is also being brought into use for the Life-Saving and Weather Services of the United States. In regard to "wireless" for commercial purposes in America, the article says:

"The De Forest Company have three vast circuits in prospect; one system is to send messages via the Great Lakes to Montana and Seattle, thence to Alaska, Siberia and the Orient. There are to be stations in San Francisco and Honolulu, Guam, Manila and Hongkong. This will make a double line of wireless communication across the Pacific. The second system is to be a branch to the Middle West, to El Paso, Santa Fé, Los Angeles and San Francisco; the third will run down the eastern seaboard to Panama, then across and up the Mexican coast to San Francisco. Connecting with this system will be the Insular branch, connecting Guantanamo, Key West, Pensacola and Porto Rico. The contract for installing this system has already been made with the United States Navy Department. All of these big systems will be in communication one with another. Mr. Lyle might have added that even now the De Forest Company are engaged in opening a circuit between New York and Boston, with lateral circuits to all important cities in New England. The De Forest Company announce that they have now more than thirty stations open for business. The P. D. Armour Company have been using those at Chicago, Kansas City, St. Louis, Omaha and Fort Worth in order to eliminate the expense of maintaining a private wire, which costs $100,000 a year. The stations at Nome and Norton Sound earned, last October, $12,000. Messages are also being received at points in the East and along the Great Lakes, including Providence, R. I.; Paterson, N. J.; Atlantic City, Washington, Cape Hatteras, Cleveland and Chicago, and in the Middle West there is communication from Illinois to Texas.

"Wireless is an aid to river navigation. The Marconi system has been installed for the Canadian Government in a series of stations which make a chain from Belle Isle to Labrador and virtually patrol the dangerous St. Lawrence River. The stations at Belle Isle, Heath Point, Port Armour, Chateau Bay, Fame Point, Sable Island, Cape Race and other points are doing commercial business. The chain, when completed, will have a scope of 500 miles. The stations keep boats advised of ice and of weather conditions ahead, so that they may steer a clear course. Here wireless systems cover a country where storms constantly blow down wires. Through wireless telegraphy Labrador, for the first time, has telegraphic communication with the rest of the world. An extension of the system on the eastern Canadian coast will do away with many of the perils of ocean liners.

"The speed of wireless—thirty to fifty words a minute—equals the speed now maintained by wires and exceeds that of the cables, and its possibilities seem well-nigh limitless. It may be," the article goes on to state, "that wireless will enter almost every sphere of human activity. In railroading there will be small excuse for collisions when an engineer can be overtaken between stations, or when he can hear from a fellow-engineer on the same track long before the fatal curve is reached. Already London is trying a wireless fire-alarm system. Perhaps the device can even be made automatic by a thermostatically controlled attachment.

"An inventor is in the field with a wireless telephone, another with a submarine wireless telephone. A Frenchman declares that he has a tel-autograph which by wireless reproduces handwriting. Airships will, of course, wish to communicate with one another; at the St. Louis Fair one has already 'talked' with the earth by wireless."

In closing this interesting résumé of wireless achievements and possibilities, Mr. Lyle says:

"What, in consequence, does the future hold? Are wires and cables to become obsolete? What new and marvelous services are to be performed for the ordinary citizen? How will commerce be affected? What will the political effects be? And the nations—huge, belligerent individuals that they are—how will they be affected? Cables are expensive things to abandon. Three hundred millions of dollars are invested in them, and two billions are invested in land wires. Yet expensive machinery is constantly thrown aside for newer machinery that does the work even a little better. So consider the menace of wireless to wires and cables. Estimates would show that a wireless system can be established, operated and maintained at from 1 to 5 per cent. of the cost of telegraph and cable systems. Even after construction the telegraphs and cables cost tremendously for maintenance, while the current expenses of wireless are extremely light. The annual cost of cables is $100 per mile; the cost of land wires, $30; of wireless, $5. 'In three years,' says Professor Fessenden, 'the cost of a wire line will amount to more than the total cost of installing a wireless system.'"

The Possibilities of Thermite.

The use of thermite in the steel and iron trade has made considerable progress in the past year, says a writer in the *American Inventor*, owing to its valuable properties becoming better known. While large steel plants have become generaly acquainted with thermite and its uses, yet little is known by the general technical world as to its composition, uses, or the possible future commercial employments which this new compound will ultimately serve.

Thermite is the invention of a German scientist and is a compound comprising pulverized aluminum and a mineral oxide, usually that of chromium. When these two substances are mingled and ignited there ensues a chemical combination that without the application of external heat generates a temperature about equal to that of the arc light, which is capable of fusing many metals, even when applied in a relatively small space. Aluminum and oxygen are among the most abundant of the primary elements, so that the commercial value of the discovery is limited only by the cheapness with which the two metals can be provided and the range of purposes to which thermite can be applied.

The principal use to which thermite has been put is the welding of rail joints, whereby continuous rails for trolley lines have become practicable. The work of rail joint-welding with the application of the thermite process is performed cheaply and effectively, and the welded rail is a good conductor of electricity, as well as having the advantage of smoothness, which obviates the shock when the wheels of a car pass over an imperfect joint. It is reported that the process has come into extensive use both in America and Europe, and that hundreds of miles of such welded rails were constructed during the past year. Its application is quite simple, the marked advantage of the system being the absence of any bulky equipment, as the necessary apparatus and materials for the work consist of only a crucible, a mold box and the requisite quantity of thermite. Each weld requires from fifteen to twenty pounds of thermite. The rails are thus rigidly and perfectly united, the only inequality being a slight rim on the face of the rail which is readily removed with a cold chisel and file. The joint possesses great strength, as the rail, if tested, would be more liable to break in a place other than the weld. A letter from a railroad contractor who is installing continuous rails in the trolley systems of Australia says: "Upon a careful examination of one and one-half miles of continuous rail at Sydney, in which thermite was used for making the welds, we only found five joints which were noticeable by small slits. These slits were so fine, however, that the sharp side of a penknife could not even be inserted, and the welds could therefore be looked upon as perfect butt welds."

The thermite process has been applied extensively and successively in the mending of castings and forgings by burning or welding the parts together. Interesting results have been accomplished in repairing broken parts of heavy machinery, such as shafts, driving-wheels and stern-posts of vessels. In foundry work this new welding composition is expected to ultimately revolutionize former methods, as its value has been fully proven by extensive experimentation.

Three Great Fishing Nations.—Figures at hand show that Japan is the leading fishing nation to-day, although the value of the sea products is surpassed by that of two other countries. Both the United States, outside of Alaska, and Great Britain produce about $45,000,000 worth annually, but Japan leads in the proportion of the population engaged in the fishing industry and in the actual number of people living by the industry.

A Private Wireless Telegraph Line.—The General Electric Company of the United States, with plants at Schenectady, in New York State, and at Lynn, Mass., has installed a private wireless telegraph system between the offices in these two cities. All private wires have been discontinued.

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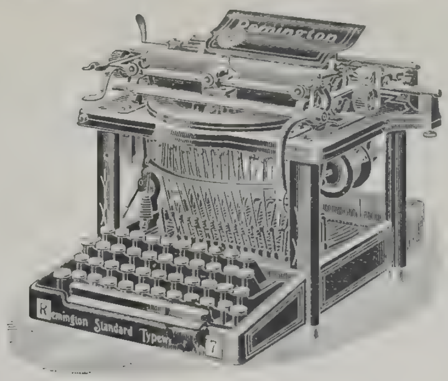
Let us have *your orders.* We believe you will be pleased and satisfied with the "New Moon."

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.



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These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

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Conditions on the Panama Canal.

IT may be said without exaggeration that the eyes of the commercial world are now on Panama, and that work on the canal will be an absorbing theme of conversation until the waterway between the oceans is opened to the ships of all nations. According to William H. Burr and William Barclay Parsons, of the engineering committee of the Panama Canal Commission, who returned to New York on February 22d, the work on the canal is in much better and more advanced condition than they anticipated. They are more satisfied with the general conditions of the enterprise, and believe that completion can be attained in less time than is popularly supposed. The preliminary work is now really ended, they say, and the actual work of construction on a large scale can soon begin.

That the work is being hastened is shown by the fact that 4,000 laborers, Jamaica negroes and natives of Panama, are already at work, and 1,000 more have been engaged in the West Indies and Central America. In the great Culebra cut, the detail of construction that will take the most time and the most money, the chief engineer has at work three large American steam shovels and is erecting five more. John Barrett, United States Minister to Panama, says that the work in the cut is progressing rapidly, and the dirt now moved per month is about double what it was at the time the commission took over the work. In the vicinity of the cut twenty-four miles of railway track have been laid, in order to expedite the work of excavation.

A great source of satisfaction to the commission has been the discovery of the availability of much of the machinery left on the isthmus by the French company. The earlier commission refused to set any value on that machinery, saying that it had better be thrown in as good measure without any particular price to be charged for it. The commission has found that there are about twenty large warehouses along the line of the canal, all of them full of machinery which has been very systematically cared for. Much of it is machinery of a type which the commission would not buy to-day, but it is not for that reason worthless. All along the line of the canal, whenever one steps out into the jungle, he finds himself tripping over rails and ironwork and running into trains of dump cars. There have been repaired and put in use many locomotives and hundreds of these cars. Moreover, three large machine shops, convenient to the work, have been resuscitated and are in exceedingly effective shape. Altogether, according to an off-hand estimate by Mr. Burr, the Government will get $2,000,000 or $3,000,000 of value out of that machinery, which cost the United States nothing.

Some idea of the magnitude of the work to be accomplished in digging the canal may be gained from a statement made by Minister Barrett. He said that the total length of the waterway from the Caribbean Sea, near Colon, to the Pacific Ocean, near Panama, will be close to fifty miles. The depth of the canal proper, from the surface of the water to the bottom, will probably be 40 feet, so as to enable the largest vessels to pass in safety. The width on the surface will vary from 200 feet on straight lines or tangents to 280 feet on curves. The bottom will vary from 125 feet on tangents to 200 feet on curves. The cubic yards of earth and rock to be excavated vary, according to the estimates of the former canal commission, from 100,000,000 cubic yards for a high-level canal to 300,000,000 cubic yards for sea-level. If any one wishes to get a practical measure of what this latter excavation includes, let him estimate by arithmetic how large a wall he could build around the world with the earth and rock taken out, or how many miles of new subway in New York City or London would have to be excavated to equal this vast total.

The outbreak of yellow fever on the isthmus during the present winter just closed has caused some uneasiness in the United States, but it is expected that in consequence of the sanitary measures now in progress in Colon, Panama and other places along the canal, the disease will practically disappear in that section of the world. At both Colon and Panama the laying of sewers and water-pipes is progressing steadily, so that in the near future both cities will for the first time be furnished with a system of sewers and water supply, with abundance of wholesome water. The presence of yellow fever is to be regretted, but was to be expected, as this disease is always present in tropical countries in America, unless long-continued sanitary precautions have been taken. Prior to the sanitary work of the commission no precaution or scientific measures had been taken on the isthmus to guard against this disease. The same medical officers who succeeded in eliminating the fever from Havana are now repeating the crusade in Panama. Beyond any question equally successful results will be produced. At present there is nothing approaching an epidemic, and the conditions are greatly improved over those in previous years. Speaking from the experience of five visits to the isthmus, Mr. Burr said he never saw so little yellow fever there as there is to-day. He was sure that the plague was almost wiped out, and that almost any one of the new cases now reported might be the last. There are very few infected mosquitoes now on the isthmus, Mr. Burr said. It has been customary of late to get after the mosquitoes by fumigating not only the house of the sick, but the whole neighborhood, with strong sulphur to kill the mosquitoes; meantime a general fumigation of the whole city has been going on and is almost completed. Before long, Mr. Burr thought, one of the worst plague spots of the world will be so only in history.

Bridge Materials for Japan.—The American Bridge Company has been shipping to Japan a complete duplicate order of the bridge material lost by the sinking of the steamer Knight Commander by Russian warships. The value of the steelwork is about $250,000.

A Boom in American Copper.

FROM reports now at hand for January and February from the great copper mining centers of the United States the output of this valuable metal for 1905 seems in a fair way to surpass the heavy records of previous years. The Amalgamated Copper Company at Butte, Mont., is operating its mines to the limit, and for the past two months has averaged a daily output of 10,000 tons of ore. The January production of the Old Dominion Copper Mining Company at Globe, Ariz., aggregated 2,126,000 pounds, the largest in the history of the company. Other American copper mining companies furnish equally good reports.

The world's production of copper in 1904 amounted to nearly 600,000 long tons, and of this amount the United States produced nearly 400,000 long tons. This immense output came largely from three States and one town. Butte, Mont., produced copper ore to the value of about $75,000,000. The American export trade in copper also appears to be keeping pace with the output of the mines. The startling figures for the calendar year just closed, showing an increased copper exportation of 79.16 per cent. over the record for the previous year, are likely to be eclipsed when the summary for 1905 is made up. Japan and China have been prominent among the recent buyers of American copper. Finding it exceedingly difficult to move the copper from the West to the Eastern ports for shipment to the Oriental countries, many of the leading exporters have begun to make their shipments direct to consumers in Shanghai and Tokio by way of the Pacific ports, at which they were able with less trouble to receive the consignments from the refining mills. The amount already exported this season through these ports is estimated at more than 750 tons, and much larger shipments are booked. During the first week in February 2,577 tons of refined copper were shipped from the port of New York for European countries, England and France being the principal buyers.

Oil in Roadmaking a Success.

THE problem of making excellent macadamized roads at a small cost has at last been solved by the road commissioners in southern California, U. S. A., if we may believe the reports from the Pacific Coast. This has been attained by the application of crude oil. There are now several hundred miles of roads which have been treated in this manner. It has been found that to place roads in condition through the use of oil is cheaper than maintaining them in half condition by sprinkling them with water. And when a road has once been put in this condition it requires but a small sum to keep it so. By tests of the effect of oil upon various soils and varying conditions of the roads it has been found that where the road has a hard, even foundation, smooth and clear of ruts, with about two inches of dust on the surface, it results in complete success and gives a surface as smooth and polished as an asphalt street. Where the soil is clayey, though the surface is rutty, it will maintain the character of the ground, allay all dust and prevent further decay by resisting the formation of mud. On roads of deep, blue sand the oil appears to have little effect.

Cotton as a Food Producer.

THE expression is often heard that "American cotton clothes the world," but many of the readers of THE AMERICAN EXPORTER would express great astonishment if told that American cotton also feeds the world. The actual cotton is not used as an article of food, to be sure, but what composes two-thirds of the product of the cotton plant is. Until comparatively recent times the downy, fibrous part of the cotton boll only was utilized and the seed thrown away. To-day a million tons or more of cottonseed are turned into products worth $40,000,000. Cottonseed oil, under the name of "pure olive oil," is sold all over the world. Tons of "cowless butter" and "hogless lard" are being consumed annually in Europe and America, while stock is fed the pressed cake from which the oil has been extracted. Besides furnishing food for man and beast this product, formerly wasted, contributes in soap to the cleanliness of the world and in fertilizers to the richness of the soil. Of the total export of cotton products, worth $400,000,000 during the past year, the oil extracted from the seed formed a very important part.

A Trolley Letter-Catcher.

THE American Postmaster-General a few days since issued an order for a trial exhibition of the novel postal device known as the "McAllister letter-catcher," a contrivance to be attached to the outside of city and suburban electric cars, in order to enable the public to post letters on these cars as they pass street corners, without stopping them to do so. This local "mail-catcher" has been the subject of many successful experiments in Washington by the Post-Office Department. As ordinary letter-boxes are already in experimental use by the post-offices in Des Moines, Ia., the new "catchers" will first be used in that city, and will be subsequently placed on the street cars of Washington and New York.

The Hog Not to Be Despised.—The American hog holds undisputed sway over and sets the price for the world's provision trade. The so-called corn-belt States of the western portion of the United States furnish by far the larger part of this product. During the year 1904 Western American pork-packers handled 23,800,000 animals, the largest number, with one exception, on record. Over 50,000,000 hogs, valued at $500,000,000, were slaughtered last year in the United States, and more than one-fifth of this enormous production was exported.

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THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6¾ cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10⅛ inches deep and 32⅛ inches long. Made of selected quarter-sawed oak and handsome polish finish.

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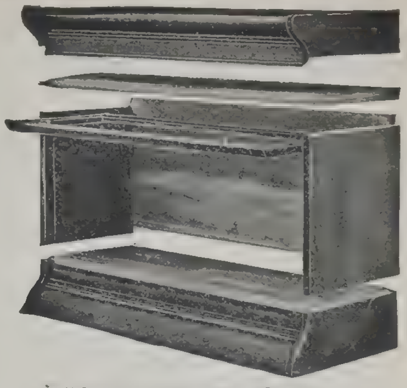
The field to sell is very large, as the same stock meets the demand from offices and public buildings; as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.



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Base Section
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Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

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Shoemaking in America.

AMERICAN-MADE shoes are now the standard of the world. In every country of Europe they are widely advertised and extensively sold. The very fact that many of the American shoes sold in Old World cities are spurious and were never in America attests the truth of this assertion. The European manufacturer, in order to meet the demands of his customers, is compelled to turn out an "American" shoe, and the way he does it is to buy his lasts and machinery, and, in many cases, his box calf and patent leather in America. There is policy in this. If the demand were not met in this way genuine American-made footwear would soon monopolize the market.

Readers of The American Exporter, many of them no doubt wearers of shoes made in the United States, will be interested in some facts regarding one of America's leading industries—an enterprise with an unblemished reputation and an ever-increasing export demand from all parts of the globe. Fifty years ago a shoe factory was unknown in America and the cobbler held sway. His task was slow and laborious and his output—all hand-work—was not to be compared, for styles and neatness, with the factory-made product of to-day. The leather-rolling machine was the first device to break the monotony of hand-work in the shoe industry of the United States. A little later Lyman Blake, an American, further revolutionized the business by introducing machinery for the stitching of shoes. He was the inventor of the sole-sewing machine. Other inventors soon followed with various labor-saving machines until the minutest detail in shoemaking has been provided for by American inventive genius. To-day, instead of the scattered shoemakers' benches of early times in America, 1,700 factories, employing 200,000 workers, turn out more than a quarter of a billion dollars' worth of shoes every year—practically every shoe worn in the United States—about 320,000,000 pairs annually, leaving 130,000,000 pairs for the feet of the world outside. The exclusive use of machinery in the American shoe factory causes a great reduction in cost. Compared with the old methods of hand production, for instance, in the making of 100 pairs of men's cheap-grade boots, before the introduction of machinery, two men would have worked 1,436 hours, performing eighty-three operations, and the labor on shoes would have amounted to a little over $4 a pair, while at present 113 operators pass the boots through 122 processes in 154 hours at a cost of 35 cents a pair.

There are factories in the United States with a capacity of 10,000 pairs a day. Before the shoe is completed by the modern machine process it passes through some forty machines and the hands of half a hundred different persons, each a specialist in his particular line. New England is the great center of the shoe industry in the United States. There has been marked progress in other sections, but the so-called New England States still have an output which represents about 59 per cent. of the total production of the country. The State of Massachusetts alone contributes 44 per cent. of the total production. The city of Lynn, in that State, which has been foremost as a shoe center for 180 years, has now changed places with Brockton, in the same State, as the largest shoe producer of boots and shoes in the world. Haverhill, Mass., ranks third, and Cincinnati, O., fourth.

Many of the large shoe factories in America operate tanneries of their own and thereby effect a saving in time and expense. The process of tanning leather has undergone nearly as great changes in the United States as that of manufacturing leather into shoes. A few years ago leather was tanned by soaking it for seven days in a weak solution of hemlock or oak bark, then for six weeks in a stronger solution, the hides being moved every day or so; for six weeks longer in still stronger "lay-away" pits, and for an additional six weeks in the same pits filled with new bark. This last operation was repeated three or four times. The whole process occupied six or eight months' time. To-day, by the use of chemicals, the thickest hide can be tanned in three or four hours, and the quality of the leather is equally as good, it is claimed.

The chief reason for the great demand for American-made shoes in Old World countries is their uniform reliability and good wearing qualities. This is insured by a tag system, peculiarly American, by which every pair of shoes may be accurately traced through the various processes of manufacture. At each stage a record is kept of the work done. So finely is the system of recording carried out in the American shoe factory that should a pair of shoes be found to be unsatisfactory and returned by a wearer in any part of the world the blame can be traced back to the particular workman who carelessly or for some other cause permited a few stitches to drop or imperfectly drew the uppers over the last. By the same system is kept an account of every element of cost to the minutest detail in the production of every shoe on every day of the year.

To Utilize City Water Supply.

A SCHEME to save the city of New York $5,000,000 annually by using the water-power of the Croton acqueduct for lighting and heating purposes is now being considered by The Merchants' Association of that city. According to several engineers, the plan is feasible, and the turbine-wheels to generate the necessary horse-power, it is estimated, can be installed for about $250,000.

That there is now a vast water-power near New York which is going to waste is certain. Within a radius of 120 miles there is power equal to 1,000,000 horse-power for a ten-hour day, or 2,400,000 for a twenty-four-hour day. This vast power, if utilized, would be sufficient to generate electricity to light the streets and public buildings, to supply all motor power needed by the city and to leave a surplus power from which the city could gain a substantial revenue.

Railroads for the Philippines.

THE American Government is about to undertake the building of railroads on an extensive scale in the Philippine Islands. Secretary of War Taft announces that actual work will be commenced during the coming summer, according to the present outlook. The Government plans now under consideration embrace about 800 miles of road, but it is expected that the construction will not cease with this amount. Speaking of the great undertaking, a Washington authority says: "From an engineer's standpoint all of this can be built comparatively easily, with the exception of one line through a mountainous section of the island of Luzon. It is roughly estimated that the cost of building the entire system planned will be about $20,000,000. This estimate, however, is but little more than a guess, as no practical surveys have been made."

It is expected that seven distinct lines will be constructed under the law recently enacted by the United States Congress, guaranteeing interest on construction bonds. It is the desire of the Administration that all of these be built as rapidly as possible and all by one company. The matter of management will be placed entirely in the hands of the Philippine Commission and all of the business will be transacted at Manila. At this early date some of the largest financial concerns in America are making application for concessions, and there is not likely to be any lack of capital for the carrying out of the undertaking.

A recent number of the Manila *Cable News,* referring to the subject, says: "Experts have decided that under the supervision of the United States Government ample railway lines will pay good returns on the capital invested. One of the greatest drawbacks to the advent of capital for the necessary development of the Philippines has been removed—that of uncertainty with reference to the policy of the United States Government—and it is more than likely that had the capitalists been as certain formerly, as now, that the people of the United States were determined to hold the islands indefinitely, much would have been undertaken that has scarcely been considered."

A Wonderful Change in Land Values.

THE city of Douglas, in Arizona, U. S. A., is four years old. In 1900 the site was only a bit of Government prairie land, valued at $5 the acre. To-day corner lots are selling for $8,000 to $10,000, and a count would show nearly 10,000 inhabitants. The cause of this marvelous growth in population and values is summed up in one word—copper. The great industries at Douglas are the Copper Queen and the Calumet and Arizona smelters, that give employment to over 1,500 men and bring a pay-roll of $175,000 per month to circulate in the town. Other industries crowd close to mining and smelting in these days of close margins when freight must be eliminated wherever possible. Hence the carshops and a refining plant are assured for the immediate future. But the new city depends upon the unlimited supply of copper in the surrounding mines to give permanence to its institutions.

A faint idea of the possibilities in the copper mining business of Arizona is given by the history of the Calumet and Arizona mine. The company blew its first furnace in November, 1902, and during the following eighteen months the earnings were at the rate of $2,000,000 a year. A good authority estimates that the total output of copper in the State has been fully $158,000,000, counting the average price at the low figure of 10 cents per pound. In 1880 only 2,000,000 pounds were produced and in 1904 the year's production reached 230,000,000 pounds.

The World's Coal Supply.

WE are apt to think that the coal supply of the world is in danger of being exhausted, so rapidly is it being consumed at the present time. It is refreshing to know that not for many thousand years will such a contingency be possible. China's resources of coal and iron are among the largest and most favorably situated in the world. The extent of the great coal fields has been put at 400,000 square miles—more than seventy times the aggregate extent of all the coal fields of Britain. It is expected that very soon Chinese coal will be delivered at Far Eastern ports at prices with which no other coal can possibly compete. An immense coal field has been discovered in Roumania. If properly exploited this field, it is said, could well supply the demand of the Balkan States. Besides this Japanese mines are so extensive as to be practically inexhaustible, and America's supply will last for thousands of years. The three great coal mining countries of the world produced last year a total of 724,678,050 metric tons of coal. Of this great quantity the United States furnished 311,643,780 metric tons, Great Britain 243,840,000 and Germany 169,194,320 tons.

Mexico a Good Customer.—Figures compiled by the Department of Commerce and Labor, in the United States, through its Bureau of Statistics, regarding the commerce between the United States and Mexico show that the exports from the United States to Mexico have grown from, speaking in round numbers, $13,000,000 in 1890 to $46,000,000 in 1904. An even more interesting fact is found in a comparison of the figures of Mexican trade with the United States with the total trade of Mexico. These show that of the imports into Mexico in the last year for which information is available, the United States supplied 50 per cent. of the total.

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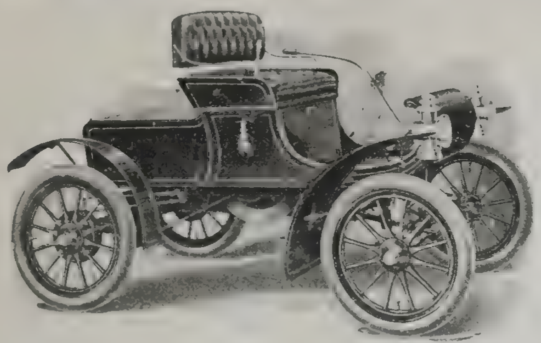

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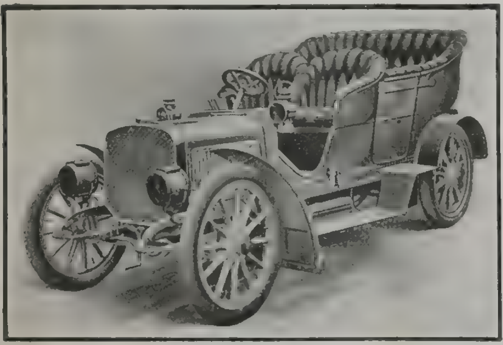

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Alaska and Her Wonderful City.

THE United States purchased Alaska from Russia in 1867 for $7,200,000. The territory, almost as large as the whole United States east of the Mississippi River, was thought by many, both in America and in Europe, to have been dearly bought. In the light of present knowledge it is apparent that the United States never made a much better investment. Official figures for the year ending June 30, 1904, the latest available show that the commerce of Alaska for that period aggregated over $30,000,000. During the same period more than $2,250,000 worth of iron and steel manufactured and $1,500,000 worth of tinplate and tinware were sent into Alaska from the United States, while during the thirty-eight years of ownership the United States has received from Alaska more than $10,000,000,000 worth of furs, fish and minerals.

The time is not far distant, according to Alfred Dunham, chief game warden of the territory, writing to the *Cosmopolitan Magazine,* when Alaska is going to take its place as a great agricultural section. There are at the present moment 1,000,000 square miles available for cultivation, and with a climate not so severe as that of British Columbia or Manitoba.

The country's canneries and fisheries are rapidly gaining a world-wide reputation, and the time is almost at hand when Nome will make Gloucester, Mass., look to its laurels as the fishing port of America.

Alaska has the largest game in the world—if we except the elephant—in its great Kadiak bears, and has moose, caribou, goats and mountain sheep. Herds of caribou that have taken two days to pass a given point are to be seen. These will soon go the way of the buffalo, however, unless some action is taken, for the white man has taught the Indian the value of certain parts of these animals, and they are slaughtered literally by the thousands each year.

The writer of the article devotes his attention in a great measure to the wonderful growth of Nome. He says:

"The development of Nome has been less rapid absolutely than that of a score of American cities in regions more naturally favored. But viewed in the light of the obstacles of transportation, geographical location and isolation from other centers, Nome's rise in five years from a barren strip of beach fronting a frozen marsh, to a city of 25,000 inhabitants, with banks and schools and theaters, paved streets and electrically lighted thoroughfares, telegraph and telephone systems, and with three separate lines of railroad entering it, stands alone in city building.

"The growth of Nome and the establishment on Seward Peninsula of a permanent civilization which is not dependent wholly upon the mineral wealth of the soil, has brought suddenly from the realm of dreams to the world of fact and probability the project, long mooted, of all-rail communication between Asia and America by way of Bering Sea. Already Seward Peninsula itself is "gridironed" with railroads built and under construction; a central Alaskan railroad is partially completed from Cook Inlet north to the Yukon River, and as soon as her affairs in the East are settled Russia will lay a spur north from her present trans-Siberian line to the Kamchatka Peninsula. From East Cape, in Siberia, to Cape Prince of Wales, in Alaska, is but thirty miles.

"All the popular conceptions of an Alaskan mining town are belied by Nome. Every facility or convenience of modern society which is enjoyed by places of its size in other parts of the United States is enjoyed equally by the citizens of Nome. Not only are such utilitarian marks of progress as the telegraph, the telephone, both local and long-distance, electric lights and bicycles everywhere noticeable, but the esthetic side of life is also not neglected, and lectures, musical entertainments and balls are as frequent as in cities farther south. Three daily newspapers are published in Nome; twelve public schools are maintained there, with sixteen teachers and 1,000 pupils. Besides there are good hotels, an excellent theater and a high school and three large churches.

"In the spring of 1899 the spot now marked as Nome on the map was as dismal a beach as might be found the world over. By June of the same year a tent city, sheltering 5,000 persons, occupied the site. By the following September the tent city had vanished and in its place was a town of substantial frame buildings. In the meantime a city government had been formed, a mayor elected, a police force organized, a fire department equipped and a court established. The most remarkable thing about Nome is the rapidity with which it acquired the luxuries of civilization. Its electric lighting system and its telephone service are excellent. Its large greenhouse supplies fresh vegetables and flowers the year round at reasonable prices.

"And the thing that brought this all about is gold. Nature hides her treasure in strange places, and puts through strange paces us that seek for it. Everybody in Nome has a claim; everybody expects to strike it rich sooner or later. Enough enthusiasm, optimism and ambition are generated in Nome each year to supply the earth—aye, the universe—could they be bottled or dried. The first mining was done by placer methods, right on the sea-beach. At first one man could make as much as $50 a day by the simplest methods. Each inch of beach, one might say, has been worked over by the hand methods, and now the whole beach is being systematically sifted again; this time gasoline engines and mercury are assisting. Farther back in the tundra, within three miles of the town, where no one suspected that there was gold at all, there has been found a deposit richer than ever has been discovered in Alaska. From $5,000 to $10,000 worth a day has been taken out here. This discovery was made two weeks before the last boat came out in the fall, and will undoubtedly add new stimulus to Alaskan travel in the spring."

Precious Stones in the United States.

THE year 1904 was one of unusual activity and productiveness in the precious stone industry in the United States. While in the world outside the output of gems for the year was not up to the record of previous years in America, according to advance sheets from the annual report of G. F. Kunz, of the United States Geological Survey, the year 1904 showed especially gratifying returns.

Many new gem discoveries were made in southern California during the year. They included magnificent blue and white topazes, weighing more than a pound apiece, which as crystals quite equaled those of Siberia; beryls from three to six inches long and one or more inches in diameter, varying in color from pale green to a deep sea-green tint (a rare variety); axinite, a gem mineral not known until lately in good crystals in this country, found in 1904 in beautiful crystals; epidote in crystals only one inch long and one-eighth of an inch in diameter, but transparent, and magnificent red, green and yellow tourmalines, found in abundance in many localities.

Crystals of tourmaline that are very large and beautiful, but have little value as gem stones, were found for the first time in 1904 near Rumford Falls, Me. Turquoise has been mined with some success at a number of localities in New Mexico, Arizona, Nevada and California. The semi-precious stone, peridot, olivine or chrysolite, as it is variously known, has been found in great quantities in Arizona, immediately associated with or inclosed in volcanic rock. Thousands of beautiful gems, one to five carats in weight, were cut from this mineral and extensively sold. The entire output of 1904, and all previous outputs of the sapphires found at Yogo Gulch, in Montana, have been disposed of at the present time by the companies that operate these mines.

By this report it will be seen that not all the precious stones are found in Old World countries, and the new discoveries of gems for the past year in the United States may be taken as an indication that still greater treasures lie hidden in the rocks of America.

A Wonderful "Matchmaker."

ACCORDING to a statement made by President Barber, of the American Match Trust, at the annual stockholders' meeting, there has been perfected a most wonderful machine, which, it is believed, will revolutionize the production of the so-called Swedish match, which particularly affects the company in its foreign operations. The machine is capable of producing and boxing 10,000,000 matches per day, requiring the employment of but three to four operators. Substantial advances have likewise been made in the manufacture of matches and boxes of other styles.

Conditions in American Banks.—At the request of one of the largest banking houses in France the American Institute of Social Service recently made a study of the various industrial betterment features in American banks. In a summary of the study the following facts appear: "In the matter of pensions little is found to be done. None of the banks has any regular pension system. Several have, however, pensioned in one or two instances. Many of the employees in these banks are members of some branch of the American Institute of Bank Clerks, through which various mutual benefits are provided. There are some banks that pay a bonus on salary of 5 per cent., 10 per cent. and 12½ per cent. at dividend periods throughout the year, while large numbers give a present at Christmas. Many establishments were found where luncheon or dinner is served free in the middle of the day. Some do not allow the clerks to go elsewhere. In a few cases banks are found to contain baths, gymnastic apparatus, libraries and sleeping rooms for their employees. Bowls and baseball are mentioned in one instance as recreative features."

American Marine Paints.—Marine paints are a specialty in the paint line, and those of American manufacture are now sold all over the world, with labels in various foreign languages. The manufacture of a paint that would be a success in protecting the submerged bottoms of iron vessels was one of the most difficult problems presented in connection with modern shipbuilding. In painting such bottoms the first problem was to find a paint that would effectually check the ravages of rust, and the next was to secure for the second coat an anti-fouling paint that was poisonous in nature, but that would injure neither the undercoat of paint nor the iron. Equally difficult with these problems was that of manufacturing an anti-fouling composition to protect the bottom of wooden vessels. American paint manufacturers have solved the problem by using copper oxide, and their product enjoys a high reputation wherever marine paints are used.

American Beer Worthy of Imitation.—The Germans are credited with being good judges of beer. That they find American brands of that beverage worthy of imitation is pretty strong evidence that American brewers make an excellent article. The American Consul at Beirut, Syria, tells of an attempt to imitate the famous Schlitz beer, of Milwaukee. He says: "American beer is in favor in this market, and has become a formidable rival of the Münich and Pilsener products. In fact, something suspiciously akin to German imitation of American beer has begun to appear in Beirut and Damascus. The 'Blitz' beer made its appearance here very recently, and the shape of the bottle, the corking, the labels, etc., resemble the Milwaukee patterns so closely as to necessitate minute inspection if the difference is to be discovered. Blitz is so printed that it is frequently mistaken for Schlitz."

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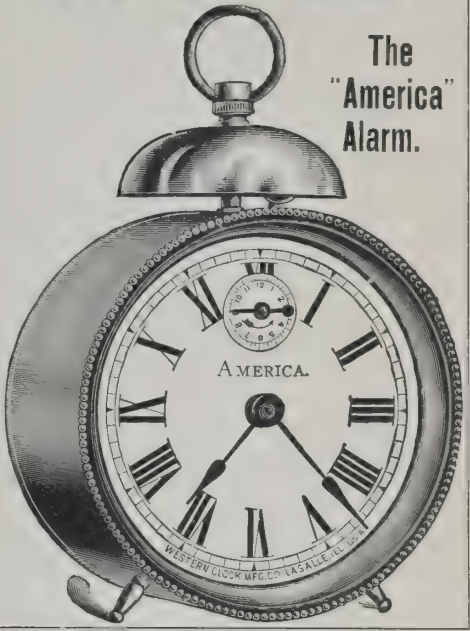
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Send us $26.50 for two "1900" and two "1900" Junior Washers TO-DAY. We will ship the washers same day that we receive your order. In acknowledging receipt of your order we will quote your price of washers in car-load lots. You will quickly convert your sample order of four washers into cash, with a profit of over 100 per cent.

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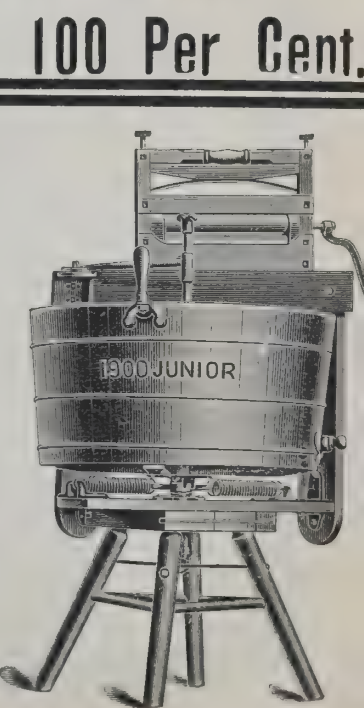
Orders received direct or through export commission houses. When ordering through the latter, please specify "1900" and send us duplicate of order.



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The Passing of the Steam Locomotive.

ONE of the best-known railroad officials in the United States recently made the startling prediction that within ten years' time the steam locomotive will find its sole usefulness in filling a place in the museums of the country. Had this prediction been made a year or two since it would have excited derision and long arguments would have instantly appeared in newspapers and magazines in refutation. In the light of recent successful experiments with electric locomotives the declaration does not seem rash, though it may not prove literally true. One thing is tolerably certain, the prediction will have a partial fulfilment within the next two or three years in the electrification of the New York Central Railway's lines entering New York City. The present plan is that by 1907 not a steam locomotive on the Vanderbilt system will approach nearer New York than forty miles. Other great systems of railroad entering New York City are also considering electrification plans, though they have not yet begun the actual work of preparing for the change.

Ten years ago the field of electric propulsion was an extremely limited one. The employment of electricity in heavy railroading was hardly thought possible, although it was tried on the Baltimore and Ohio Railroad. The three great factors which determine the availability of a motive power are speed, safety and expense. For years electricity fulfilled none of these requirements. An electric locomotive has finally been evolved, after years of experiment and repeated failure, which fills all the requirements.

At Schenectady, N. Y. (U. S. A.), some three months ago, after exhaustive trials, a type was finally accepted, and fifty similar to the model are now being built. This electric locomotive is capable of generating a maximum of 3,000 horse-power, while the biggest steam locomotive can put forth only 2,000 horse-power. At the final tests of this electrical giant a speed of seventy-five miles was attained, and it was the general opinion of those who witnessed the test that a speed of ninety miles could be easily reached with rails and road-bed of a proper nature. These electric locomotives are built of steel and are shaped so as to present the least possible resistance to the air when in motion. They are odd-looking, resembling slightly the freight caboose in general railway use. They are double-headed, with a cab at either end. They are much lighter than the steam locomotive, weighing but eighty-five tons, as compared with 150 tons, the usual weight of the heavy Atlantic type of steam locomotive now in use. These locomotives are far and away ahead of their steam-propelled ancestors in the matter of stopping and starting. They can reach top speed and come to a halt from a standstill start inside of four miles. With these and many other advantageous features it does not require any great stretch of the imagination to foresee their general adoption on all railway lines, if the cost of operation is not too great.

The *Railway Age,* an American authority on all matters pertaining to railroading, in a recent article discusses the substitution of electricity for steam in a careful and somewhat conservative tone, but reaches the conclusion that the electric locomotive is certain at no far distant day to replace the steam-driven "iron horse" throughout the United States for both suburban and long-distance traffic. The article in question says: "There is little doubt in the minds of operating officers of railroads that the electric locomotive will some day replace the steam locomotive for main line, through freight and passenger service. The question as to when this will be accomplished for even one trunk line is still very doubtful, and it has been the common remark of railroad men of middle age that they did not expect to see such conditions in their lifetime. The improvements in electric traction in the past two years have been so marked that, as it now appears, the time is not far distant, and it would not be rash to predict that this will be accomplished within ten years. It requires four or five years to prepare plans, build the power-house, manufacture the machinery and prepare the track for such an installation, so that if electric traction is adopted on a large scale for any road it cannot be put in force for some time. Conditions are rapidly shaping themselves so that the heavy passenger work about New York, Philadelphia, Washington and Boston will be done by electricity, and the experience thus gained will be so helpful that it will doubtless lead to the extension of the electric service between those cities."

Concrete Instead of Timber.

ACCORDING to the report of the Canadian Deputy Commissioner of Public Works, it has been found in the upper St. Lawrence and the lake region that the construction of concrete masonry is superseding the use of creosoted timber. The works now going on in the harbor of Quebec, those under contract in Three Rivers, the important improvements in Montreal and the large works in Port Colborne are being built of concrete masonry. With the gradual disappearance of timber of large dimensions and consequent higher prices, the cost of cement work is coming near that of sound, durable timber of large size, and in view of the permanency of such works, compared with works where timber is employed, and the saving in repairs, it is probable that in all important harbor improvements in Canada in future only concrete masonry will be used.

Tinplate Mills Busy. —Practically every tinplate mill in the United States is working at utmost capacity at the present time and will be doing so for at least six months to come. So heavy is the demand that one of the largest plants—that of South Sharon, Pa.—is to be immediately enlarged at a cost of $500,000.

The Automobile Industry in the United States.

THE manufacture of automobiles in the United States practically dates only five years back. All efforts previous to that time were largely experimental and the output more or less crude. To-day there are more than 250 makers of motor vehicles in the United States, with an annual output of more than 20,000 machines. Most American automobile makers are striving for supremacy in the other markets of the world. During the year 1904 motor vehicles valued at nearly $2,000,000 were exported and the outlook for the present year is extremely promising. It is interesting to note in this connection that American automobiles are being exported to France, the "birthplace of the automobile industry," at a lively rate.

The year just passed has been rich in developing the splendid efficiency of the American motor vehicle on road and track, at touring, racing and hill-climbing, in crucial tests and in competition with foreign-made machines. That efficiency and reliability have been attained by the American makers is evidenced by the fact that several American millionaires, prominent as enthusiasts and connoisseurs, who never have owned an American-made automobile, have recently placed their orders for them.

Commenting on the situation, a well-known authority says that it seems as if the automobile industry is certain to repeat in some respects the history of the bicycle. The first bicycles used in America were imported, but it was not many years before the Yankee manufacturers, with their flying start, had overtaken their instructors, and American-made bicycles were being exported to all parts of the world. A year ago a man who did a large business in French automobiles declared that importing them would not continue to be profitable for more than two years longer; that in two years American machines would have preference.

It is to be considered as probable that the full tide of automobile exporting will not be reached until after the industry in America has passed the boom period and there is a heavy production of both high and low priced cars for which a market must be found. Thus far there has been no overproduction and no ruinous competition involving price-cutting.

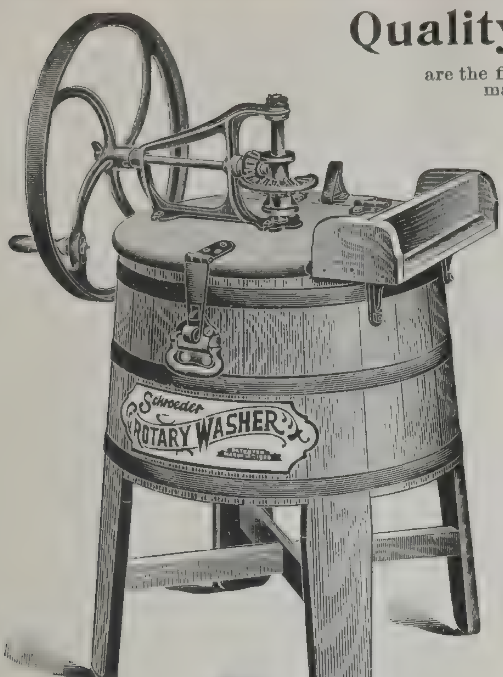
A City to Plant a Forest.

THE city of Los Angeles, Cal., owns 300 acres of brush land called "Griffith Park," which it proposes to convert into a commercial forest, says the *Talisman.* This will be the first instance of a city in the United States creating a forest. Under its cooperative offer the Bureau of Forestry had last summer at Los Angeles four of its experts, making a comprehensive planting plan for the forest. This plan was completed at the end of September. The idea is to convert a waste piece of land into a productive forest, which will not only pay for its creation and care through the sale of mature timber, but will prove a constant source of pleasure and recreation for the citizens of Los Angeles. Other cities could very profitably follow this excellent example.

California Olive Industry.—When the Franciscan fathers and other missionaries settled in California, on the Pacific Coast of the United States, 300 years ago, they set out olive trees, and thus started an industry that is still expanding. From the few trees set out by the missionaries the California olive groves have grown until they contain millions of trees. The development of the olive-raising industry within the United States was long delayed and did not attain importance until during the last quarter of the nineteenth century. Previous to 1880 there were few olive trees in California outside of mission gardens, but in the year mentioned quantities of trees of the best Italian and French varieties were imported. There were years of discouragement and despondency over failures and short crops. But, despite the fact that it took time and experience to learn what varieties would thrive best and what soil was the most suitable, the lessons were finally learned and success came. Parts of California are now vast olive orchards, and the indications are that in the not far distant future the State will not only fill the domestic requirements, but will supply a considerable and constantly increasing quantity of olives for export.

A Monster Ferryboat.—In the near future it is probable that tunnels will supersede ferries as a means of overcoming short distances between cities separated by water. For a time, however, the ferryboat will continue to hold sway. What is claimed to be the largest ferryboat in the world is operated by the Southern Pacific Railroad Company in transferring trains across Carquinoz Strait, between Benicia and Port Costa, in California. This boat is not only large, but powerful. It is longer than some of America's great battleships—430 feet—and has a width of 116 feet. Her engines have a combined strength of 2,000 horse-power. The "Solano," as this monster is called, transfers 10,000 trains annually across Carquinoz Strait—about a mile in width.

American Hats.—The product of American hat factories is now found all over the world, even on the heads of soldiers of European armies. An order for 10,000 hats for the British army, to cost $45,000, was filled by a Philadelphia firm. American makers of hats were formerly dependent upon European manufacturers for a considerable part of their supplies. Now the Americans supply their own wants, making everything needed in the manufacture of hats from the raw materials. One factory that turns out almost 3,000 dozens of hats each week has looms with which to weave the silk bands and manufacture its felt from fur, all in the same plant.



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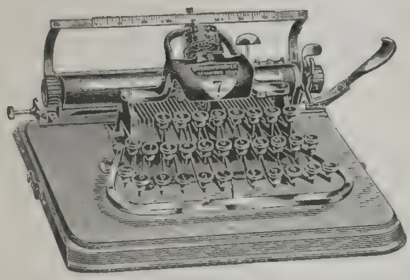

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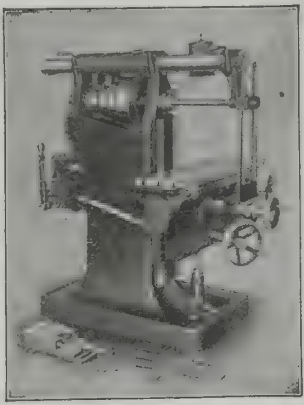

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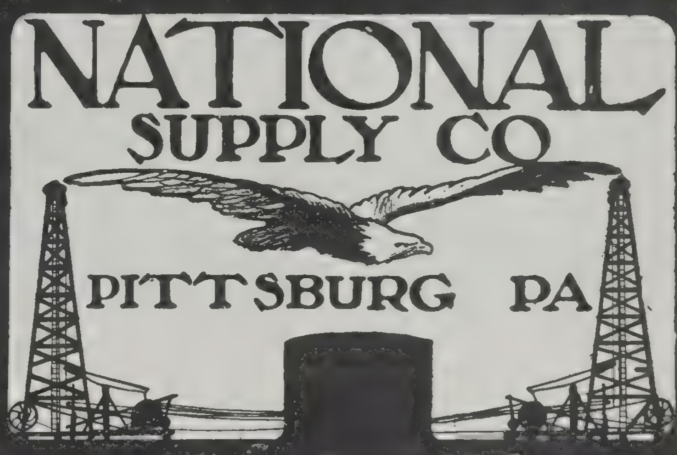

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American Workshops from a British Viewpoint.

IN a recent number of *Page's Weekly* (London) appears a paper by A. J. Gimson, in which the writer relates his impression of American workshops, as formed during a tour of the United States, in which he visited a large number of plants, including works for the manufacture of steam engines, pumping machinery, elevators, valves, tools, etc. While he did not ind the general equipment of the American workshops far superior to those n England, the organization of the workshop in America struck the author as superior to that in similar works in England. "In a modern business," this authority says, "an American begins to make one particular machine or paricular kind of machine. His whole energy is, in the first instance, concenrated upon making this machine superior to anything at the time upon the market." More than in England he thinks that natural ability is aided by the best scientific knowledge in the design of the machine to be produced.

A feature of the engineering industry that impressed the author was the close intercommunication of technical institutes and manufacturing workshops, of professors and manufacturers, and the presence, in minor positions of authority, of young men who had passed through a complete course of technical instruction. "The American employer," he says, "gives one the impression of being a firm believer in the merit of the machine he is manufacturing. Doubt is eliminated from his mind, and he can enter whole-heartedly into the processes of manufacturing his particular article without a fear that it may not meet the needs of his customer. His confidence is based on a very complete knowledge of his subject and not upon an overexalted belief in his own special ability. When the actual making of the machine designed comes to be undertaken, it is essential that accuracy and economy of production shall be attained." The writer refers to the methods for obtaining accurate machine work and for testing the accuracy of machines as they were being put together which were admirable in their approach toward perfection. No detail seemed oo trivial to be well thought out, and the tests were such that their object was attained without needing any considerable expenditure of time on the part of the workman. The author is convinced that more work is obtained from he American workman through the close study of economies by the staff in he drawing and allied offices.

In conclusion Mr. Gimson reveals some further reasons why the American manufacturer is able so successfully to compete for the trade of the world and why the "American invasion" has assumed such alarming proportions during recent years. He says: "The able man is allowed full play for his ability, and s rewarded by a very great increase in money earned over his slower or less ndustrious neighbor. In the same way, by card processes, by clocks, with dials divided into tenths and hundredths, are minutes saved which a workman uses in calculating his time and which a clerk wastes in complicated addition and multiplication of figures. Persistent energy and patience have achieved remarkable results in the organization of cheap production in some of these workshops."

Enormous Farm Production.

THE United States Department of Agriculture reports the value of farm products in the country for the year 1904 at $4,000,000,000. Of this enormous total, larger by far than ever before in the history of American agriculture, the export trade took nearly $900,000,000. With the exception of wheat there was a marked increase shown in all the prominent lines of farm production. Corn led, with a crop so large that with its proceeds the farmers of the country could have paid off the national debt, with a handsome sum to spare. Cotton passed all records and stands second on the list, while hay and wheat contend for third place. Potatoes, barley and oats reached their highest production in 1904, the latter exceeding all previous yields by over 0,000,000 bushels. Even rice joined the procession, with a yield of 900,000,000 pounds, which was 300,000,000 more than ever before.

Americans Run Mexican Railroads.—An American railroad constructor of long and varied experience, returning from a recent trip through Mexico, eports that on nearly every railroad in Mexico is an American who sits on he engineer's side of the cab, and the conductor is almost always an Ameri-an. The crews receive orders from American trainmasters, sent by Ameri-an dispatchers, and above the trainmasters are American officials. The methods they learned in the United States are applied in Mexico, and the esults are similar.

Steel Cross-Ties for Railways.—One of the most extensive railroad ystems of the United States has recently ordered 7,000 steel cross-ties to be placed along its roadbed. Of course, steel ties are much more costly han wooden ones, but it is thought they will prove economical in the long un as they wear much longer. Another consideration which will favor the general use of the steel cross-tie is the steadily increasing scarcity of timber n America.

A New Wood Preservative.—A preparation for preserving wood, manufactured from crude petroleum oil, is now being placed upon the market by an oil refining company of Beaumont, Tex., U. S. A. This new product is said to be especially useful in treating railroad ties and bridgework. It is claimed that wood may be treated by this process more cheaply than with creosote as a preservative, and that its effectiveness is greater.

Motor Boat Gains Popularity.

AT the tenth annual Sportsmen's Show, just held in New York, the increasing popularity and serviceableness of the motor boat was clearly demonstrated. The most optimistic admirers of American skill and inventive genius were surprised at the variety and beauty of these craft. The boats were shown on the largest indoor tank of water ever built. It contained more than half a million gallons of water. On this artificial lake the motor boats were shown in operation. In all there were about twenty exhibitors of motor boats, and eighteen others showed only the motors.

There were on exhibition diminutive yacht tenders of 4 horse-power and scores of other models, up to the long, light greyhounds, with their ponderous engines of 150 horse-power, that drive the frail shells through the water at railroad speed. One of the firms had in operation a new non-sinkable lifeboat equipped with a gasoline engine of 24 horse-power. It is said to be the first successful power-driven lifeboat that has been turned out, although England, France and other countries have been experimenting for years. The secret of success in this boat lies in an automatic cut-out, which shuts off the power when the propeller wheels leave the water and prevents the breaking of shafts. The boat is self-righting and self-bailing.

United States Government officials were in attendance, being interested in the feasibility of using motor-driven boats as a quick means of transporting troops in time of war.

International Two-Cent Postage.

A UNIVERSAL postal congress is soon to be held in Rome. Representatives of every civilized nation on the globe will gather at the Italian capital to consider methods for improving the postal service of the world. Some radical changes are to be proposed by the delegate from the United States. Among the number are 2-cent postage between America and countries like Great Britain and France and universal postage stamps. One of the subjects to be discussed is a tariff schedule for mails in transit in countries other than those in which they originate, or for which they are destined. It is expected that China will, at the Rome convention, be admitted into the Universal Postal Union, which now includes sixty-four countries.

American Salmon Sent to European Cities.

CONSUL FRAZIER, in a report from Copenhagen not long since, relates that "the steamship Oscar II, on its last trip from New York to Copenhagen, brought 30,000 Columbia River fresh salmon for delivery to consumers in Copenhagen, Berlin, Paris and other European cities. The fish were forwarded to New York in refrigerator cars and to Copenhagen in cold storage. The fish arrived in excellent condition. They were consigned to a prominent wholesale dealer, who forwarded the greater portion of them to branch houses in Berlin and Paris."

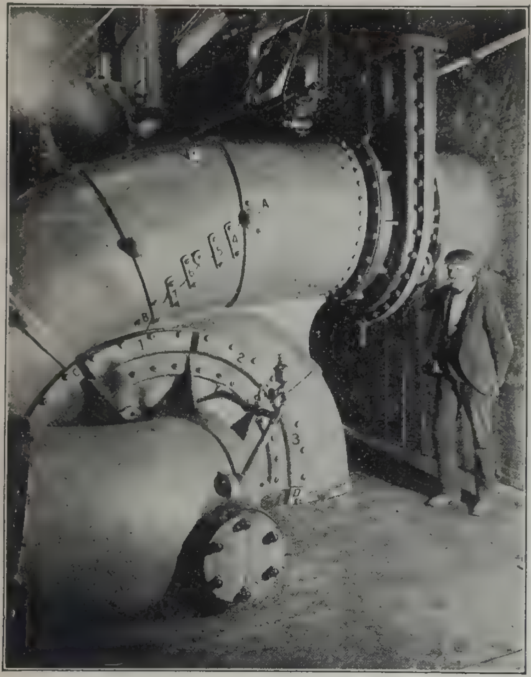
A Novel Steam Locomotive.—A steam locomotive with many novel features has been put in service on the American railroad between Chicago and Milwaukee. It was designed and constructed for the purpose of hauling what is known as "The Pioneer Limited"—a sixteen-car train between the above-named American cities—in two hours' time. To do this requires an average speed of more than sixty miles an hour. The engine weighs 150 tons. There is a special arrangement of its drivers, and its elongated boiler tube has been designed to obviate the necessity of removing cinders from the smoke arch under a 100-mile run.

Icelanders Use American Goods.—The United States Consul at Copenhagen reports a strong demand for direct steamship communication between Iceland and the United States. Iceland consumes great quantities of American products, which reach the island principally through Scotland and England. American canned beef and Alaskan salmon are especially popular. As very little meat is produced, the Icelanders import the preserved meats. America is the source of supply for kerosene. American-made shoes have been introduced, and there is a growing demand for them.

Japan Buys American Leather.—The United States Leather Company about the middle of February filled an order from Japan for twenty carloads of sole leather. This is only one of many heavy Japanese shipments of leather from America during the past few months. The total value of these, it is thought, will exceed three-quarters of a million dollars. The February exportation was valued at $200,000. The leather shipped is made into shoes in the Japanese Government factory at Tokio, which is equipped with American machinery.

Steel Workers Share Profits.—Fully 5,000 employees of the United States Steel Corporation share this year in the one-million-dollar distribution of profits allotted by the directors. Heads of departments, foremen, clerks, furnacemen and skilled workmen share the bonus pro rata on the basis of salaries received. The American Smelting and Refining Company has also adopted a plan of profit-sharing with efficient employees.

Millions for City's Fuel.—The city of New York pays in one year for fuel used in heating its public buildings, schools, etc., over $2,000,000.



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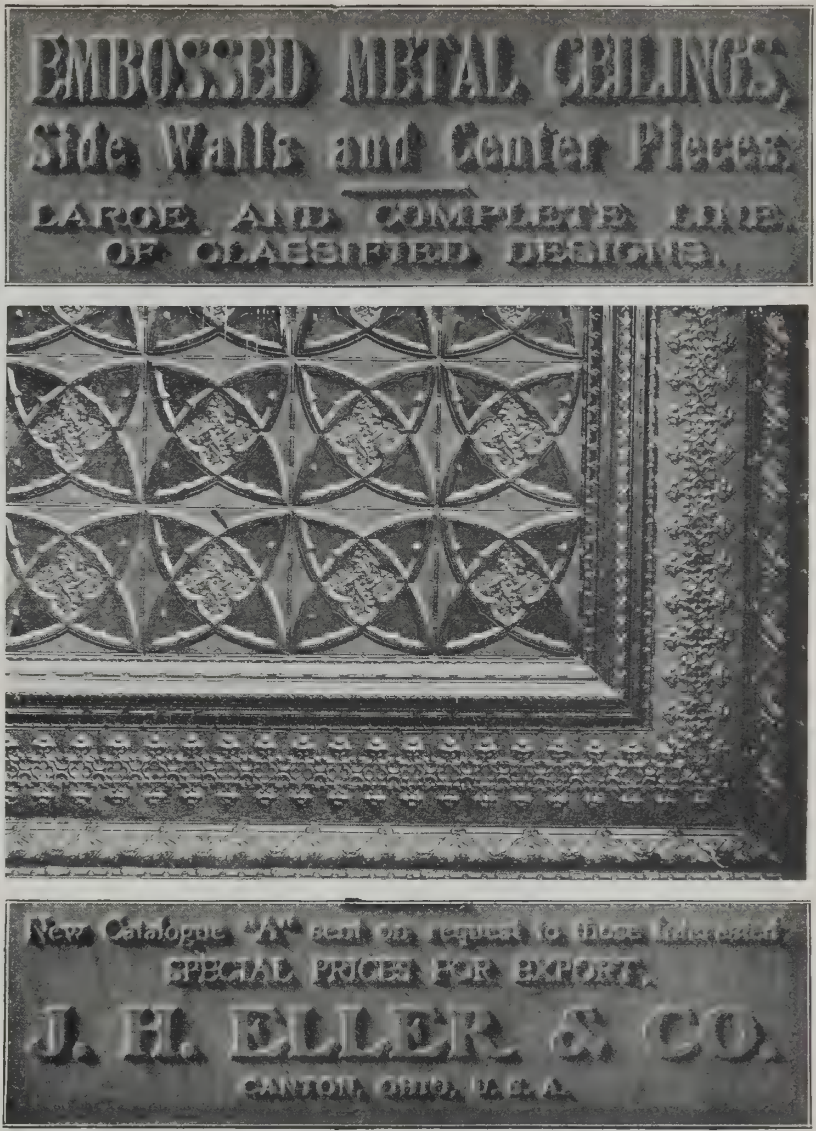

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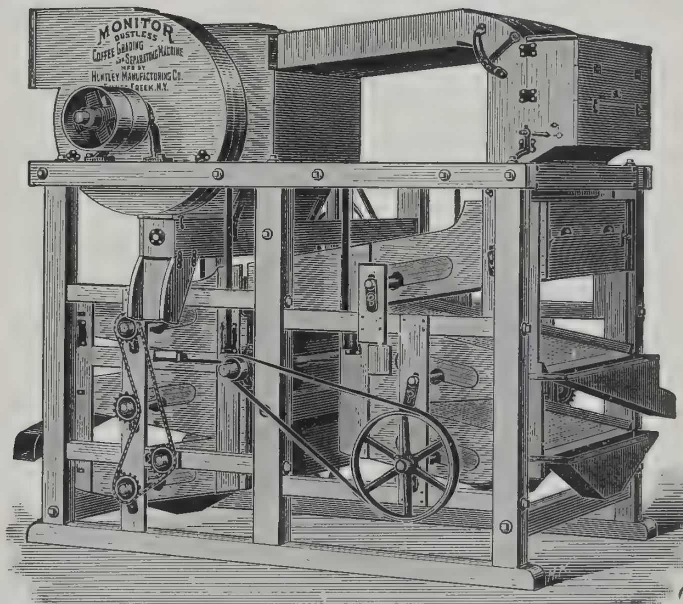

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Japan Buys American Locomotives.

A HIGHLY important order for locomotives was placed with the Baldwin Locomotive Works, Philadelphia, a few days ago by the New York agents of the Japanese Government, after bids had been received from builders in the United States and Europe. The order was divided among three firms, of which two were American and one Scotch. The aggregate order was for 152 engines, of which 102 will be built in the United States. The value of the American contracts is estimated at about $1,325,000. The Japanese Government has made several purchases of American locomotives in recent years, and the excellent record made by them materially aided in causing a favorable predisposition in the present case.

The locomotives will be of a composite type, with strength and endurance and able to give a fair amount of speed. While the engines will probably be most largely used for general purposes on the railroads of Japan, their immediate destination will be Korea, where they will be utilized in hauling troop and supply trains. The shipments will be in lots of twelve locomotives each. The contractors are to begin deliveries at once and continue them without delay. The first shipment is expected to be made in about one month and others will follow at about three-week intervals. A guarantee of prompt delivery is what won the contract for the Baldwins. The company, notwithstanding its big home orders, which have aggregated about 700 locomotives since the Presidential election, was able to guarantee quicker delivery than competitors.

Canada's Agricultural Implement Supply.—The tariff revenue statement of Canada for the year 1904 shows that the duties on agricultural implements imported from the United States amounted to nearly $3,000,000. A conservative estimate of the value of last year's agricultural implement exports from the United States into Canada is $12,000,000. Harvesters were far in the lead, with parts of various implements second. Mowing-machines, plows, threshers, horse-rakes and grain drills followed in the order named. The value of the vehicles imported was about $1,500,000, while that of automobiles was slightly less than $1,000,000.

American Mohair Mills Nearly Ready.—At Greystone and Providence, in Rhode Island, U. S. A., two large plants for the manufacture of mohair are rapidly nearing completion. These plants are being built by the well-known British firm of Joseph Benn & Sons, Bradford, England, and when in operation will employ 1,000 hands each. American material will be used, and the consumer will be able to wear the finest mohair goods manufactured from American raw material and turned out by American labor, but under British management.

France Buys Heavily in America.—The demands of France upon America for the products of farms, mine and factory are steadily increasing. In 1903 Frenchmen consumed over $92,000,000 worth of merchandise from the United States, an excess over the previous year of nearly $10,000,000. Complete figures for 1904 are not at hand, but there is little doubt from partial returns that the year will show another marked advance. Exports to France from the United States consist principally of cotton, oil, tobacco, copper, machinery, tools, food products and grain.

Steel from Ocean Sands.—A company has recently been projected in the United States for the conversion of the magnetic black sand which abounds on the shores of the Pacific Ocean, along the State of Washington, into steel. The backers of the project are confident that a good grade of crucible steel can be produced from this sand, with which a large part of the coast between Gray's Harbor and Cape Flattery is covered and which is composed largely of magnetic iron of Bessemer quality.

Heavy Locomotive Orders.—Following close upon a million-dollar order for locomotives for a railway line being constructed in the southwestern part of the United States, the American Locomotive Company announces an order for 125 locomotives for export. The country placing the order is not stated. Their foreign business has been increasing for some time, and with the recent absorption of the Montreal plant the corporation is in a better position to meet export demands.

Apples for Britons.—The apple crop of the United States for 1904 was the largest in eight years, and nearly 6,500,000 bushels were exported, chiefly to England. Canada also had a very large field of the "king of fruits," and nearly 4,500,000 bushels to the mother country. The bulk of this fruit was sold in three cities—London, Liverpool and Glasgow.

Production of Aluminum.—The production of aluminum in the United States shows a wonderful growth. In 1883 the total output was eighty-two pounds. With the appearance of the electric furnace for its extraction the production increased rapidly, until it has now reached a total of about 8,000,000 pounds annually.

Some Cigars Made in America.—Smokers of American cigars in the world at large, and their number is not small, will be interested to know that the great cigar-producing States are Pennsylvania, which turns out 2,000,000,000 cigars a year; New York, with half that number, with Ohio and Virginia not far in the rear.

A New Parcels-Post Agreement.

DURING the month just closed a postal convention has been consummated between the United States and Great Britain which will greatly facilitate trade between the two countries. After many years of negotiation a parcels-post service between America and England is assured and will go into effect on April 1st. A similar treaty is being negotiated between France and the United States and will soon become a fact. There now exist parcels-post treaties between the United States and Germany, Belgium, Norway, China, Newfoundland and Japan.

The British-American agreement does not differ materially from former parcels-post treaties. It provides that parcels which do not exceed four pounds and six ounces in weight, and not exceeding $50 in value, may hereafter be sent at the rate of 12 cents a pound, instead of 10 cents an ounce, as formerly. All kinds of merchandise and articles usually placed in the mails may, with specified exceptions, be put in the parcels carried under the treaty. Live animals, except bees in properly constructed boxes; dead animals, except insects and reptiles, when thoroughly dry; fruits and vegetables which easily decompose, poisonous and inflammable and combustible materials are among the articles barred.

World's Largest Farm Grows Larger.—The largest farm in the world until recently, wholly within the State of Missouri, U. S. A., has now been extended into the adjoining State of Iowa. This big farm is owned by David Rankin and his son. The elder Rankin is worth $1,000,000, and has made it by farming. He owns 23,500 acres in one county, and, being still afflicted with the desire to own more land, had to reach into another State, where he bought 3,500 acres more. About 300 persons are employed on this farm. There are, of course, scores of ranches in the United States that are much larger than this farm.

Cotton Crop of One American State.—In a recent speech before the United States Senate Mr. Bacon, of Georgia, made the statement that the cotton crop from that State last year sold for more than all the gold that was dug in all the mines of the United States, including its territories and outlying possessions, and the part of the crop which went to foreign parts, which was two-thirds of it, amounted to within a very small fraction as much in dollars as all the gold dug in all the United States in the year.

New Smokeless Powder Antiseptic.—The United States Government is preparing to test thoroughly the antiseptic qualities of smokeless powder. The attention of the authorities was called to the matter by an accidental explosion while James C. Mitchell, the inventor, was conducting some experiments. The inventor had his left arm torn off, as well as being otherwise badly lacerated, though all of his wounds healed without any trace of pus formation. The various tests of the powder so far show its superiority.

American Pottery Invades France and England.—Trenton, N. J. (U. S. A.), has long been famous for the manufacture of pottery, but we believe the readers of THE AMERICAN EXPORTER are not generally aware that one of the potteries of that city is sending its wares to France and England, the original home of fine pottery, in large quantities. Decorated plates, costing as high as $600 to $800 per dozen, were sent out for the recent holiday trade.

A Mountain of Cinnabar.—In Alaska there is said to be a mountain largely composed of pure cinnabar. The mountain has been mined to a distance of some 400 feet, and the cinnabar is said to yield 55 per cent. of mercury. This statement means more when it is known that a mine which produces as low as 3 per cent. of mercury can be made to pay. The entire mountain is the property of one man—John T. Keegan, of Leadville, Col. (U. S. A.).

A Find of Corundum.—There has recently been discovered in the Lehigh Valley, of the State of Pennsylvania, U. S. A., untold quantities of one of the most valuable minerals on earth, next to gold, silver and copper. It is corundum, and the vein of it is 12 feet thick and of unknown length. As this ore analyzes 95 per cent. of pure corundum, and the ore itself sells for 10 cents a pound, the value of the find may be imagined.

An All-Night Bank.—The already extensive list of night operating establishments in New York City has been augmented by the organization of an all-night banking institution. It is known as "The First Night and Day State Bank" and is capitalized at $2,000,000. Its directorate includes some of the most prominent capitalists of New York. It is located in the heart of the theater and restaurant section of the city.

British Merchants Outdone.—Speaking of American push and persistency, the London *Engineer* says: "The merchants of the United States, despite the preference shown to this country in the form of lower duties, are more than able to hold their own with British merchants in the Canadian trade. They furnish Canada with about 60 per cent. of all the foreign goods she buys, while we only sell her about 25 per cent."

American Barrel-Making Machinery.—American barrel-making machinery is now used in Baku, Russia, as well as in Chili, Mexico, Borneo and other oil-producing countries.

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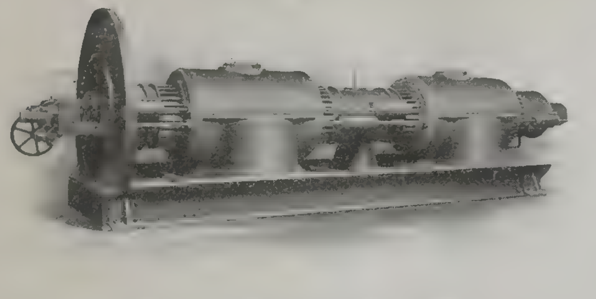

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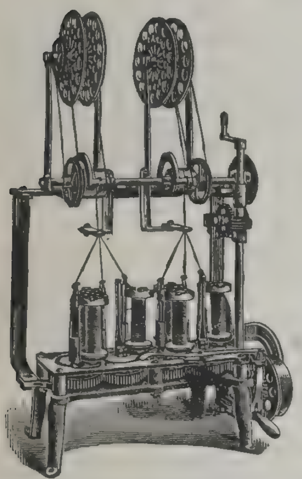

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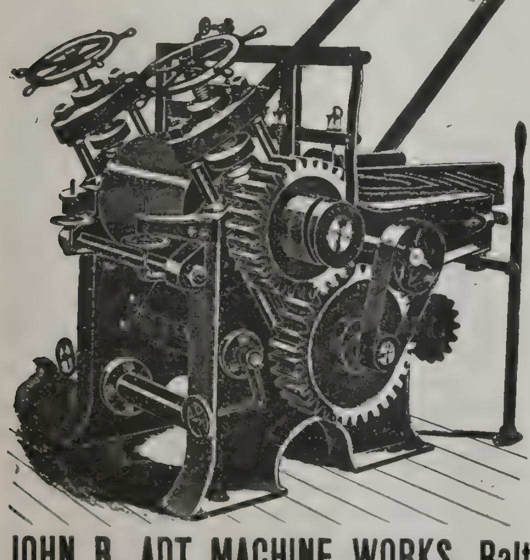

Of very strong construction and containing the very best in workmanship and material throughout.

It will press stems to a thinness not easily distinguished from the leaf in the manufactured product.

It is also provided with a Roll-Moistening Device, insuring constant moistening of the rolls.

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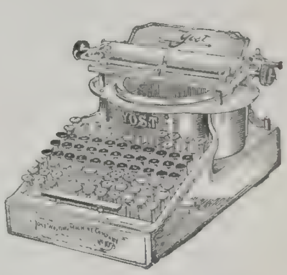

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$16 50/100 Upon receipt of SIXTEEN and 50-100 DOLLARS in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] **No. 6 X SLICERS, for Export only.** Weight boxed, 120 lbs.

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American Cars for Argentina.

THE first lot of one of the most important consignments of cars that have been forwarded from the United States to South America in recent months was shipped from New York about the middle of last month by special steamer to Rosario, a port on the River Plate, about sixty miles above Buenos Aires, Argentina. There will be four other shipments, the last of which will be made on April 15th, all to the same consignee. The contract for the construction of the cars was awarded by the representatives of the Argentine Government to a Springfield (Mass.) company last summer in competition with other American and several European concerns. Not only were the figures of the successful bidder lower than those of its competitors, but its time limit for the completion of the contract was shorter. When the contract was awarded it was announced that an inspector would be sent to the works of the car-building company to supervise the construction of the cars. His arrival was delayed and the commencement of the work was necessarily postponed, but the delay served to give an interesting object lesson in the resourcefulness of American manufacturers. As soon as the inspector arrived practically every man in the works was put at work on the cars, and the construction was hastened so greatly that the time lost by the original delay was virtually all regained.

The first shipment included fourteen baggage-cars and their appurtenances; the second shipment, to be made March 1st, will include five second-class cars; the third, on March 10th, six first and second class passenger coaches; the fourth, March 20th, five first-class coaches, and the fifth and last, on April 15th, will include eight sleeping-cars—a total of thirty-eight cars, as called for by the contract.

The final inspection of the cars before shipment was made in Springfield by Dr. Ramon A. Toledo, senior member of the firm of Toledo, Maraini & Co., of Buenos Aires, general contractors for the Argentine Government, and Señor Manuel Elordie, technical inspector for the Argentine Government. The cars will be a part of the rolling stock of the Northern Argentina Railroad.

Americans to Control Chinese Railway Construction.

WILLIAM M. PINKSTON, one of the officials of the Canton-Hankow Railway Company, of China, is now in America to purchase material, including rails and ties, for the construction of the projected line between the two cities named. About 750 miles of road between Canton and Hankow are to be built. The work will begin in June and is expected to be completed in three years. In an interview recently published in the San Francisco *Call* Mr. Pinkston throws some light on recent rumors regarding this railway project and its management. He says:

"There is probably truth in the Brussels reports. The Canton-Hankow Railroad is to be built under a concession granted to the China-American Company, of which J. Pierpont Morgan is the financier. When the bonds for the road were issued Morgan placed a block of them abroad, and the report reached China that the Belgians, who do all their foreign investing through the Government, had purchased the securities. The Chinese, especially the more intelligent classes, are strongly opposed to any foreigners other than Americans getting control of big interests in their empire. They have great faith in American enterprise, and keenly appreciate the course of this country after the Boxer war in preventing the other foreign governments from taking more of the Oriental territory. When it was reported that Belgian capital had been invested in the bonds of the Canton-Hankow Railroad the Chinese officials showed their displeasure and notified the China-American Company that China would prefer to take the bonds itself. As a result of this diplomatically put protest, the vice-president of our company and J. Pierpont Morgan went to Europe to recover the bonds placed on that continent. The recently reported purchase of the railroad bonds by Morgan from the King of Belgium was probably the result of negotiations that had been pending for some time. The Canton-Hankow Railroad is a promising undertaking. When completed it will be the best line of road in all China."

A Record-Breaking Cargo.

THE Great Northern steamship Minnesota, the largest vessel afloat, which recently made her maiden voyage from Seattle, Wash, U. S. A., carried the largest and most valuable cargo ever loaded at a Pacific coast port. It consisted of 26,000 tons of merchandise, chiefly domestic products, valued at $1,804,633, according to the manifests filed in the customs office. Prior to the departure of the Minnesota the record for trans-Pacific cargo was held by the Pacific Mail steamship Manchuria, which cleared from San Francisco on November 19, 1904, with a cargo valued at $1,765,000. The value of the Minnesota's cargo exceeds that amount by more than $30,000. The Minnesota's cargo comprised, among other things, 7,070,250 pounds of raw cotton, rated at $707,250; 6,684,317 yards of cotton fabrics, $392,656, and 42,754 copper ingots, 896,117 pounds, worth $138,000. The Minnesota made a record-breaking run across the Pacific, reaching Yokohama in thirteen days.

American Shoes for German Bride.—From official quarters in Berlin comes the report that the bride of the heir-apparent to the throne of Germany will wear American shoes. All the shoes to be included in her trousseau are to be made in the United States. There is no doubt that the American shoe manufacturer makes shoes fit for queens and empresses, but this recognition of the fact gives it added force.

A Floating Navy Yard.

THERE is soon to be launched from the United States navy yard, in Brooklyn, what the officer in charge of its construction has been pleased to call "a miniature floating navy yard." This strange craft has been in process of construction for some time, and when completed the American navy will be in possession of a floating repair-shop, the like of which the world has never seen, and one which, according to the officials in charge, will make it possible to repair second-class cruisers, gunboats, torpedo-boats and torpedo-boat destroyers in any place where the water is not too deep to anchor.

This "floating navy yard" is built entirely of steel and is 120 feet long and 40 feet wide. She will draw but 6 feet of water. Some idea of the capabilities of this novel craft may be gained from a partial enumeration of her equipment. At one end will be a steam derrick capable of lifting twenty tons, while at the other end will be the boilers that will furnish steam to operate the dynamos, air-compressors and the derrick. Amidships will be the navy yard proper. Practically every machine used in repair work will be installed somewhere in this space, including a miscellaneous assortment of electrical and pneumatic lathes, drills, slotters, shears, punches, etc. This little navy yard will be able to attend to the entire repairing of small craft, except in the matter of damage below the water line, which, of course, will require dry-dockage. It will also be able to do much of the work of refitting the largest battleship and armored cruiser. The craft is practically non-sinkable and can be towed anywhere and for any distance by any steamgoing vessel. Should this one prove a success, as it is almost certain to do, larger ones will be built and stationed at convenient points in United States waters.

A Mammoth Cave in Canada.

THE world-famous Mammoth Cave of Kentucky, U. S. A., has a counterpart in the Canadian Northwest, if we are to believe the stories of recent explorers. A writer in the Philadelphia *Engineer* thus describes this great natural wonder: "It has four entrances, and its length is two miles and its width is nearly half a mile. It has a depth in some places of over 2,000 feet. It is studded with millions of brilliant crystals and colored stalactites, ranging from colorless, pink, red and brown to purple, which hang from the top and sides in clusters resembling icicles. Beautiful columns from six inches in diameter upward reach from floor to ceiling. The formation is blue lime rock, and the cave has probably been formed through the action of water, for far down in the depths of the abyss in the center of the cave can be heard the rushing waters of a mighty subterranean river, whose source or outlet is a mystery.

"There are evidences that this cave was inhabited by Indians of an ancient race. Old stone weapons, tools and bones are lying around in odd corners, but they are far from being plentiful. In one of the recesses explored were found the mummified bodies of two human beings. The cave is situated near Ravelstoke, within two miles of the Canadian Pacific Railway, in a country which was thought to have been thoroughly explored by those living in the vicinity. It was discovered by a party of prospectors for gold or coal."

To Harness the Mississippi.

ATTENTION has been called to a project for damming America's greatest river by the introduction of a bill authorizing a franchise in the United States Congress. Should the franchise be granted, as is quite probable, it would result in the construction of a power plant larger than that now in operation at Niagara Falls. The proposed dam across the Mississippi, which will be between Keokuk, Ia., and Hamilton, Ill., will lead to the construction of a powerful plant planned to develop not less than 60,000 horse-power, which will be available for the surrounding towns for a radius of sixty miles. It will call for an investment of not less than $6,000,000 and will be built entirely without cost to the Government. The dam and lock will cost $3,000,000 and the installation of turbines, dynamos and converters will call for an amount equal to that. The Federal Government is to have complete control of the dam. In fact, the promoters of the enterprise offer to make this improvement and donate it to the Government for the privilege of perpetual use of the water-power developed.

The dam when built will be 4,000 or 5,000 feet long and 35 feet high, and it will form an important link in the general plan to improve the channel of the Mississippi above St. Louis.

A Big Tunnel Project.

THE successful building of submarine tunnels in the United States during the last few years seems to indicate that very soon tunnel building will take the place of bridge building on all the great transportation lines of the country. The use of electricity as a motive power does away with what has heretofore been the chief objection to subway travel. The latest tunnel project announced in the United States is that under Detroit River to connect the American city of Detroit with the Canadian city of Windsor. For years an international bridge had been contemplated, but that has now been abandoned. The Michigan Central Railroad, which runs through Canada to Niagara Falls, will construct and operate this tunnel. Electric locomotives are to be used. It will take four minutes to run a train from the Detroit passenger station to the tunnel entrance and seven minutes to run under the river to Windsor.

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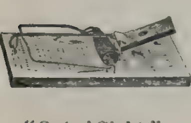
Particular attention given to export orders. Illustrated catalogue free, giving full particulars. Order through your Exporter.


"Out o' Sight" Mouse and Rat Trap, also Imitations.

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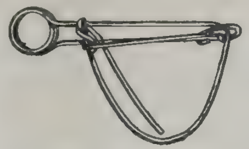
"Stop-Thief" Trap, 4 sizes. For catching small fur-bearing animals.

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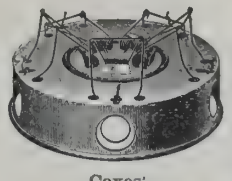
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Weigh about 200 pounds. Measure 42 x 23 x 18 inches.

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No. 1—Brass burner; removable fount; 8-in. circular wick; height (bail down), 28 inches.
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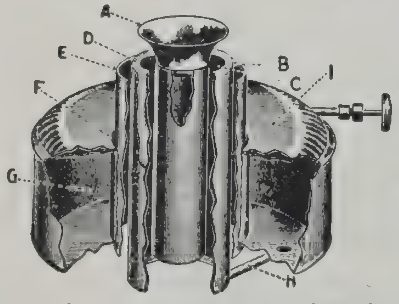
Upon receipt of $35.00 in U. S. gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29½.

OUR SAFETY BURNER. Note Construction.



A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
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D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
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I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

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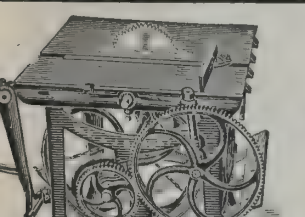

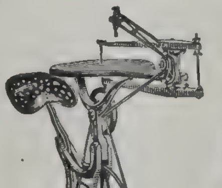

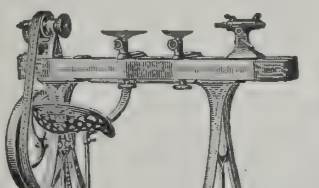

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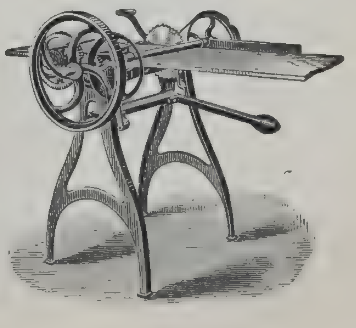

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Largest Power-House in the World.

THE largest power-house in the world is located in New York City. Stupendous is the only word which adequately describes the vast plant, in which is generated the electrical force that turns the wheels and furnishes light and heat for the entire Interborough Rapid Transit System of the metropolis. This system now embraces four lines of elevated railroads, with a total trackage of over forty-seven miles, and also the newly opened subway lines, with twenty-one miles of roadway now in operation and many miles more in process of construction. This mammoth power plant, just completed and put into operation, covers two city blocks, and is 700 feet long by 200 feet in width. Its height is about equal to the ordinary six-story building, and from its roof rise six smokestacks, each 265 feet high. The building and its equipment cost about $7,000,000. The productive capacity of the battery of giant dynamos is more than twice that of the great power plant of Niagara Falls. Only a small portion of the capacity of the plant is at present called into service, and it is estimated that sufficient power may be generated to meet the transit demands of New York City for at least a quarter of a century.

A glance at the equipment of this wonderful power-house will prove of general interest. The main engines, nine in number, which drive the dynamos are rated at 8,000 horse-power each. They are twin-compound engines, with high-presure cylinders 42 feet in diameter, of the horizontal type, and low-pressure cylinders 86 inches in diameter, set vertically and equipped with Corliss valves. These engines run at a speed of seventy-five revolutions a minute. The big generators are of the revolving flywheel type, directly mounted on the engine shaft. They have a capacity of 3,000 kilowatts apiece and furnish a three-phase alternating current at 11,000 volts and twenty-five cycles a second.

The chief motive power of the plant is divided into six sections. Five of these sections are already complete. The equipment of four of these sections is alike and consists of two big main engines, two circulating water-pumps, two feed-water heaters, two dry air-pumps and twelve huge boilers. The fifth is a turbine section and contains, in addition to the above, four 1,250-kilowatt steam turbines, three 250-kilowatt motor-driven exciter units, two 250-kilowatt steam-driven exciter units, besides feed-water pumps and water-heaters. Down under these great motors are sixty boilers, having each 6,000 square feet of heating surface and 100 square feet of grate surface.

A distinguishing feature of this power plant is the vast number of labor-saving devices introduced. Only about three hundred men are needed to operate the entire station. The switching system is especially worthy of note in this connection. Only three men are required for this important department, though the switchboard is one of the largest in use. These three men in reality handle only little switches which control 110-volt currents, but these in turn control 11,000 volts. By this system of management the lives of the operators are in no jeopardy by coming in contact with high-tension currents.

By an ingenious system of power transmission the eight different and widely separated substations of the Interborough Company in New York all draw their supply of motive power from this one station. At a pressure of 11,000 voltage the current is transmitted by underground cables to the various substations, where it is transferred to a direct current of 600 volts. The daily consumption of fuel in this station, when all the units of power are called into action, will be about 900 tons of coal. Here again the labor-saving element of construction is manifest. The coal supply is obtained directly from boats moored at an especially constructed pier at the river front of the building, whence the coal is loaded on a belt conveyor and carrier through a tunnel to the power-house, where it is elevated by another belt conveyor to the great bunkers, which have a capacity of about 25,000 tons, or about one month's supply. By a similar system the ashes are carried from the furnaces and discharged into scows at the pier, all without the aid of manual labor.

Reasons for American Success in Trade.

A WRITER in a recent number of the London *Times* bases some remarks on the causes of American success on an experience of twenty months' residence in St. Louis. He says, among other things, that this success is obtained in the face of disadvantages from which the English employer does not suffer, at least in not so acute a form. The American employer contends with less efficient assistance from the rank and file, who, blessed with a restless temperament, are frequently prompted to change their allegiance to other firms in the hope of betterment. He is, to a greater extent than in England, hindered by strong labor unions, while politics, which affect so largely industrial conditions, are a factor of instability unknown in England.

Nevertheless, he succeeds, and the writer attributes this mainly to the fact that he is willing to take risks. An American is not content with one thriving business, but will speculate in another enterprise or twenty, relying upon success in one to compensate for failure in another; whereas the Englishman, with his prejudice against novelty and his horror of failure, runs less risk, but at the same time less chance of a brilliant success. With him a new idea stands condemned for its very virtue, and unless it presents the elements of immediate success, and he can be assured that some one else has already done it, he seldom accepts the undertaking.

Another risk the American will assume is to sell goods at a loss with a view to create a new market, relying upon the force of habit which leads a customer who knows a certain article to gradually pay an increasing price for it, until the sale becomes profitable. Again, the American pays particular attention, according to this authority, to the selection and promotion of his subordinates, trusting his judgment rather than testimonials and certificates, which play so important a rôle in England, and which are, after all, only the opinions of third parties. The American employer quickly gauges the value of his new assistant, and, if desirable, will promote him over the heads of his seniors who have staked a claim for advancement by sitting on office stools for a period of years. To place a new man suddenly in a position of command is a risk which is often worth the while. The American business man recognizes that the success of an enterprise largely depends upon efficient assistants, and it is his endeavor to secure the best and attach them to him by making their interest common with his own. It is men that tell, not systems. A recognition that intelligence and integrity stand before all other considerations is a wonderful lubricant to the wheels of progress.

World's Largest Dry Dock.

THE largest floating dry dock owned by any nation is being built by the United States for use in the Philippines. The work has been going on for many months at Sparrow's Point, near Baltimore. Standing out on the shores of the Chesapeake Bay this great dock might easily be mistaken for a huge warehouse of fireproof construction. The building of this immense dock was a big undertaking, but in a few weeks the United States Navy Department will begin the still more difficult task of towing the monster to its destination, Olangapo, Subig Bay, P. I., the new American naval station in the Far East. A brief description of this new marine wonder will be of interest to readers of THE AMERICAN EXPORTER.

The dock is built of steel plates and is in the shape of a box with both ends and the top missing. The sides and the bottom of the structure are divided into hollow compartments. The lower part of the structure contains sixty water-tight compartments. When it is desired to sink the dock these compartments are opened and the dock settles slowly into the water. It is 500 feet long over all, 100 feet wide between fenders and 42 feet high on the side walls clear upon the pontoon deck upon which the ship rests when docked. Its specified draught over the 4-foot keel blocks which support the ship is 30 feet. That means it will take on a ship drawing 30 feet of water. As a matter of fact, the dock so exceeds contract requirements that it will have water enough above the sill to dock a ship drawing 35 feet of water. Thus it will accommodate the largest battleship. So nicely is the dock adjusted that as it rises three rows of keel blocks running lengthwise bear directly on the bottom of the ship and raise it so accurately and evenly that no shoring timbers are necessary against the sides of the ship to keep it from listing.

The construction of the floating dock will distinctly strengthen the American naval system, and in case of war with any European power would prove of inestimable advantage. The magnitude of the undertaking of transporting the structure to its destination is made evident by a comparison. The Spanish dry dock at Havana was built in England and towed 4,500 miles across the Atlantic. The British Government in 1869 sent out to Bermuda a floating dry dock. This was replaced in 1902 by a new floating steel dry dock towed out from Newcastle. Their trips were not half as long as the journey before the American craft. Two routes are being considered. The shorter one—that followed by the American torpedo-boat flotilla last year—is 10,500 miles long. The other around the Cape of Good Hope is 3,000 miles more. It is expected that the monster will be ready for this long ocean voyage in May.

Farmers Buying Automobiles.

THAT American farmers are up to date and progressive is evidenced by the fact that they are already large buyers of automobiles. At the Chicago Automobile Show last month the farmers of the Middle West caused much surprise by extensive purchases of horseless vehicles. In the southwestern section of the United States the ranchmen are beginning to get into the automobile band wagon, and especially in Texas. The demand there is for the higher-priced machines. The cattlemen want a car that will carry them from 75 to 100 miles without stopping.

John Farson, president of an American automobile club, says on this subject: "No other class of our citizens is so ready to take up with modern devices that save labor and effect economies in time as the farmers are. They do it not only because these improvements best serve their purposes and practical work; they have the same pride in having the best things in life which men in cities have."

After commenting on the advantages of the automobile for pleasure trips the same authority continues: "But the use of automobiles for traction purposes will bring them into the field of real utility on the American farm. Where there are good roads the use of an automobile will work wonders in reducing distances between the farm and the market. Ordinary farm produce can be carried to the market in a light passenger car, and heavy trucks will be necessary to be of any assistance in moving great loads. With such trucks, built much open the lines of the electric truck carts in the cities—farms which are remote from a railroad, and can, therefore, be bought for much lower prices per acre—can be made almost equally valuable with farms near the cities—in fact, they will no longer be far away. Their proximity will be measured not by miles but by hours, and the ability quickly to put a load of grain into the elevator at the nearest railway station will place the farmer in a far better position to get the best prices for his wheat in a market that is continually changing."

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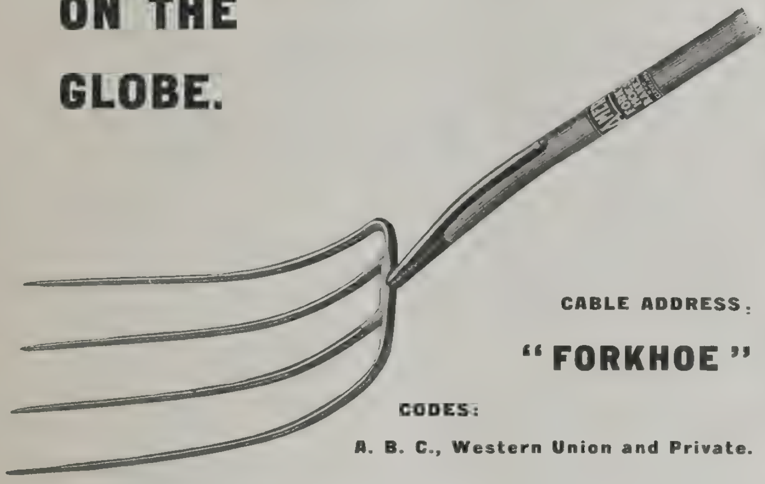

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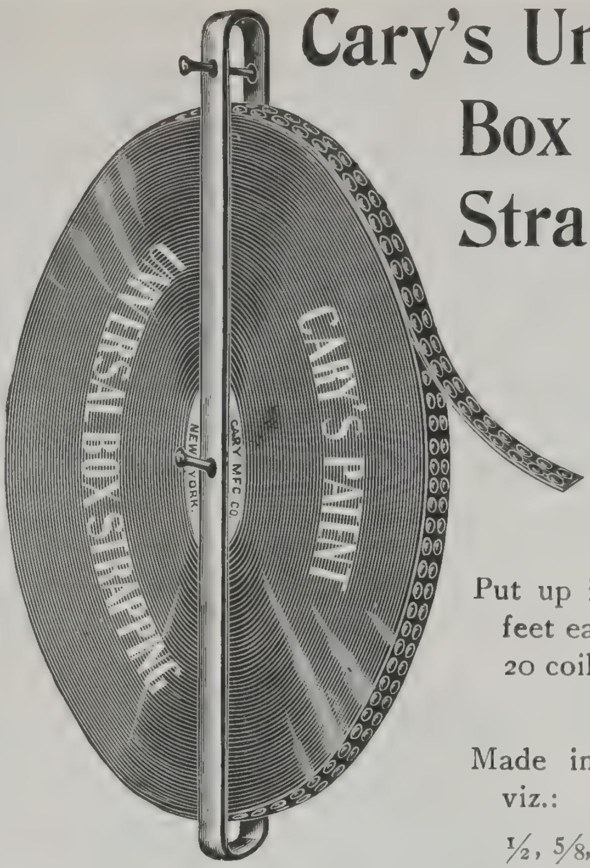

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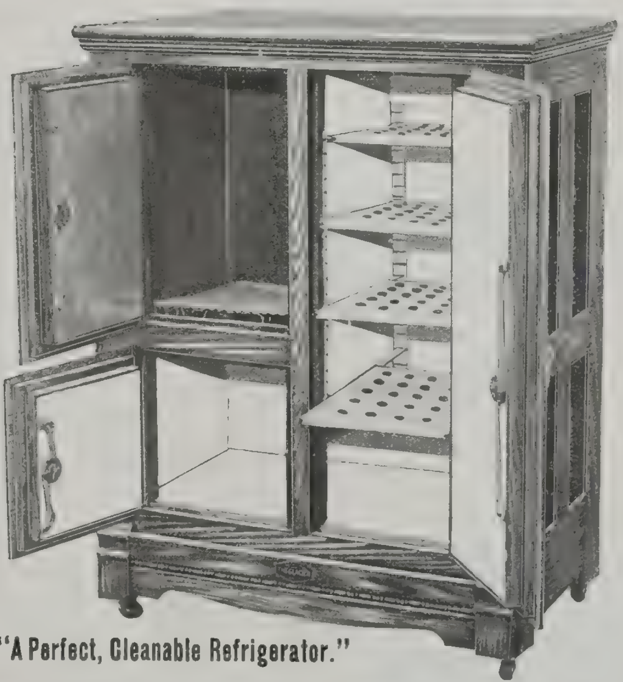

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John Morley on America.

JOHN MORLEY, the English statesman, publicist and author, delivered an address in Brechin, Scotland, on January 18th, shortly after his return from a visit to the United States, in which he gave some of his impressions of America and its institutions, and in the course of which he made some interesting comparisons. Mr. Morley said that he had spent two active months in America, but would not pretend to say that he had, in so short a time, got to the bottom of any of America's great problems. He was in America during the Presidential election last November, and in the course of a brief comparison between the governmental systems of Great Britain and America said that he greatly preferred the British constitutional system. As to municipal corruption, Mr. Morley said:

"A great deal is sometimes said about what is called the outrageous corruption of American municipal bodies. That is very lamentable, so far as it exists, but a country cannot be in such a bad way when it can be said that the recent candidates for the Presidency each gave proof positive of entire probity, integrity and willingness to sacrifice any personal aims and interests rather than surrender what they conceived to be sound principles. I am not going to despair of democracy because people justly pointed out faults in the working of the system of the United States. It is true that our American kinsfolk have a confidence in things working themselves out which, perhaps, dangerously approaches to fatalism. They have confidence in their own common sense, shrewdness, right feeling, and eventually the issue usually justifies that confidence."

While the United States was without an established church there was no country where religion was more genuine or more earnest, Mr. Morley said, and while America was a country without the untold blessings of a hereditary House of Lords, there was no country, so far as he knew, where the rights of property were safer. Mr. Morley touched upon the negro problem and pointed out the perils that may come upon the country, when at the end of the present century there may be in America a negro population of from 60,000,000 to 80,000,000. He expected to find much indifference as to the friendship of America for Great Britain, but he found that the Americans viewed the British with feelings of both esteem and friendship. He added that those feelings could only be endangered by setting up a scientific tariff and by discriminating under it against the United States.

Mr. Morley touched upon the fiscal condition of Canada and said that the loyalty of the Canadians to the mother country was particularly pleasing to him. On the question of the tariff he said: "We are arguing whether we should do better or worse in protective bonds, while in the United States people are arguing how it is possible to disentangle themselves from such bonds without injustice to vested interests or dislocating the established trade machinery. There is a powerful undercurrent running in the United States in favor of a gradual revision and modification of their tariff. The revolt against high protective tariffs is there growing too strong to be long resisted. We should certainly think twice or thrice before we establish a system which America finds it so uncommonly difficult to get rid of."

The speaker discussed other matters of interest particularly to the student of political economy and the politics of the Empire. The address was full of interest and was much commented upon by the English newspapers.

Iron and Steel Exports.

THE United States Bureau of Statistics has just made public some interesting figures showing the remarkable expansion of iron and steel exports for the year 1904. The grand total value for the year was nearly $130,000,000, as compared with less than $100,000,000 in 1903. These figures cover raw materials, except ore, and also rolled products, engines, machinery and tools. The amount of long tons for the year 1904, with the increase over the previous year, is shown by the following table:

	1904.	Increase.
Pig iron	79,025	28,646
Bars	75,549	16,006
Rails	416,250	385,113
Structural steel	55,514	24,873
Wire	118,581	10,060
Nails and spikes	45,108	2,464

The tremendous increase in the exports of steel rails will be noticed. The heaviest shipments, 216,801 tons, went to Canada; Japan and Asia received 101,738 tons; South America, 28,347 tons, and Mexico, 23,871 tons. Shipments to all of Europe amounted to 17,581 tons.

Fish and Game for New Zealand.

THE Chief Inspector of Fisheries of New Zealand recently arrived in the United States. He landed at San Francisco, and the purpose of his visit is to secure 1,000,000 of the Eastern white fish and 300,000 salmon eggs to take back across the Pacific. He will also convey 10,000 land-locked salmon eggs, presented to New Zealand by the Bureau of Fisheries, Washington, D. C., and a consignment of bronze-wing turkeys from the Agricultural Department. At the same time Game Inspector Morehouse, also of New Zealand, is to ship a consignment of twenty elk, twenty-four Virginia deer, five black-tail deer, some raccoons and a large number of Canadian geese and varieties of ducks. Ten of the elk were presented to the colony by President Roosevelt. The balance of the consignment has been purchasd by the New Zealand Government.

Wonders Wrought by Artesian Wells.

ARTESIAN wells are working wonders in what was once known as the "Great American Desert," according to a correspondent of the St. Louis *Globe-Democrat,* who writes from Artesia, in New Mexico: "Artesian wells are as common," he says, "as gushers in the famous oil fields of Texas. The bringing in of a new artesian gusher is no uncommon event, although one of increased importance to the future of this country. There are at present over 200 artesian gushers in the very heart of the almost undiscovered Pecos Valley of New Mexico. New wells are brought in at the rate of perhaps five a day in the entire valley. The whole country will soon be dotted as thickly with artesian wells as the plains of Oklahoma are covered with windmills over ordinary wells of water. Artesian wells are necessary down here, because they make the future of the country as a commonwealth of the Southwest assured. This is a country entirely devoted to irrigation. Without water from beneath the soil the country would be a desert plain, as it was some twenty years past. The rainfall in the valley is about fifteen inches per annum; the sun shines every day in the year, and the altitude is 3,600 feet. These facts make irrigation necessary for successful farming."

It was fourteen years ago, according to this writer, when the first artesian well was struck. A well-digger from Texas discovered the vein of artesian rock, tapped the underground lake and the water began to pour out of the top of the well at the rate of ten or twelve gallons an hour.

"Since then," the writer continues, "200 or more artesian wells have been dug through the valley, about 30,000 acres of land are under a complete system of irrigation, by which the soil can be kept moist through the rainless summers, and with the cool night the fields and orchards can be made to produce immense yields. Through every field of alfalfa, corn, vegetables and through the orchards are immense watering canals. The water from the reservoirs and artesian wells is turned on at certain seasons of the spring and summer and allowed to flow and cover the fields for a sufficient period to completely wet the earth. The flow of water is then shut off and a month or more elapses before another flooding takes place. The cost of irrigation makes land values run from $50 to $300 for well-improved and irrigated land, while raw lands can be had at from $12 an acre upward. An artesian well often costs $1,500 and will water 160 acres of orchard and alfalfa land.

"The yield of all crops is enormous. Fruit grown in the irrigated Pecos Valley received nine premiums at the World's Fair at St. Louis, and last season one orchard produced 10,000 bushels of apples for shipment, sold by their owner for $3,000 on the trees. A truck farmer sold from eleven acres $1,780 worth of watermelons, while $300 worth of celery per acre is not considered an excessive growth. There are about 2,000 acres of bearing orchards in the valley now, and it is estimated that not less than 200,000 acres of uplands in the valley can be turned into good orchard land, because of these artesian wells. The depth of the artesian wells ranges from 300 to 800 feet, flowing from 500 to 2,000 gallons of water per minute. The Cecil well, one of the largest, flows 2,560 gallons per minute, and is about 500 feet deep, while the Carson well throws a steady stream of water 7 feet 9 inches above the casing, and is 800 feet deep. These wells will pour out a steady stream of water night and day of 1,000 or more gallons per minute, and continue to do so without ceasing."

American Competition in Australia.

AMERICAN competition, because of its persistency and briskness, is causing some bitter feelings in Australia, according to a Sydney correspondent of the *British Trade Journal.* This authority states that because of this competition the Sunshine Harvester Works at Ballarat have been closed. It is stated that during the last twelve months fully 14,000 Canadian and American harvesters have been imported into the commonwealth, about 5,000 into Victoria, 4,000 into New South Wales and the remainder into the other States. The American-built machines command such a ready sale that the Australian manufacturers are demanding further protection in the shape of increased duties.

Complaints are also being made respecting the increased use of American leather, but this is largely due to its superior quality. Large quantities of Australian leather are tanned by processes extending over six or seven weeks, instead of as many months, consequently the article thus produced does not possess the durability of American leather. The imports of American boots and shoes into the commonwealth are also heavy, as are those from England. Few of the American goods are low-priced, says the writer quoted, and would be regarded dear in London, but their wearing qualities are unsurpassed.

Another American-Built Railway.

UNITED STATES CONSUL GOTTSCHALK, at Callao, Peru, in a recent report says: "The electric railroad between Lima and Callao, the second enterprise of its kind in Peru, is in operation. Like its predecessors, that between Lima, Chorillos and other nearby seaside resorts, the Lima-Callao road is equipped with American power machinery and handsome American cars, both open and closed. The roadbed and track were laid by an American firm.

"The new road, which is run by the overhead trolley systems, covers the 8.6 miles between Lima and Callao in a little over twenty minutes. It runs cars every fifteen minutes and has lowered by one-half the fares formerly existing on the steam railroad. The new road is remarkably popular, and is so much traveled as to make the acquisition of additional rolling stock a necessity."

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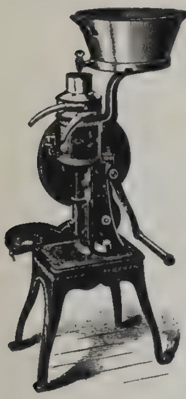

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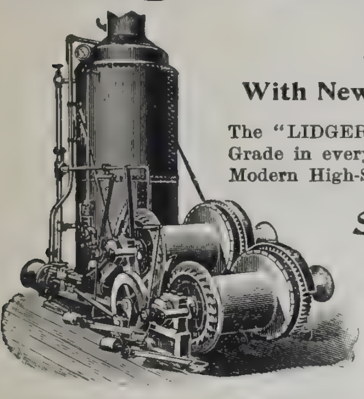

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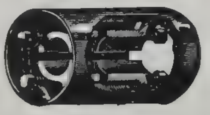

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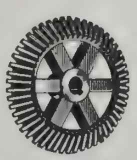

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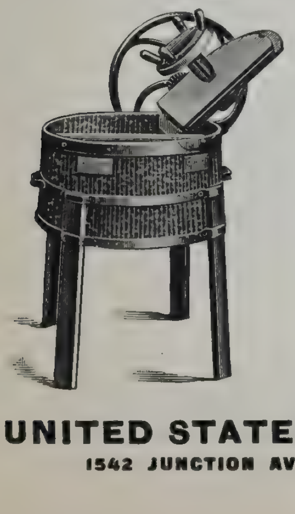

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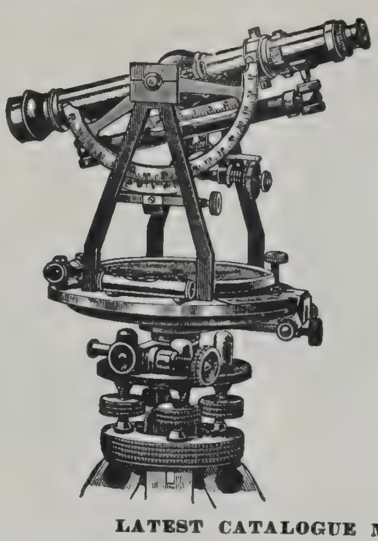

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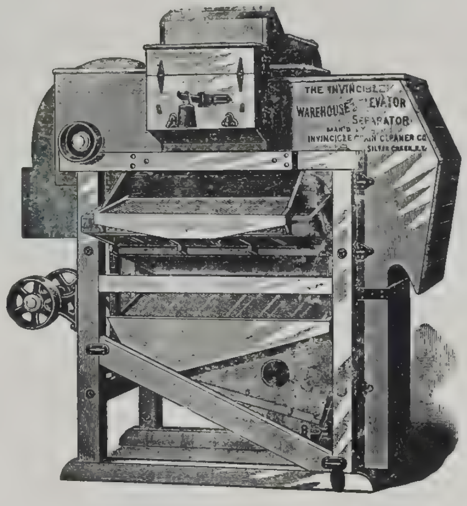

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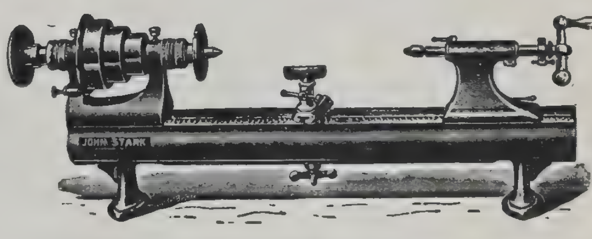

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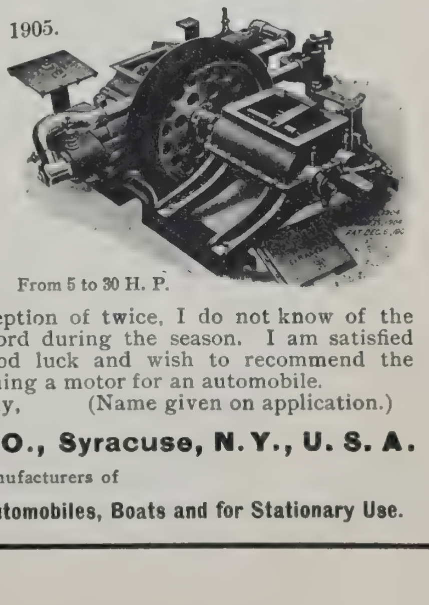
Yours truly, (Name given on application.)



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Expansion of Wealth in the United States.

HALF a century ago the wealth of the United States was estimated at a little more than $7,000,000,000. At the present time it is placed at $110,000,000,000. During this half century the population of the country was multiplied by less than three and one-half, while the wealth was multiplied by a little more than thirteen. During this period every person's share in the total wealth was multiplied by four.

The census of fifty years ago showed that the United States in point of wealth stood below half a dozen nations of the Old World. To-day all those nations have been entirely outdistanced.

In a recent number of the *World's Work,* C. M. Hoevey gives some startling figures. He says:

"Although the United States comprised only 5 per cent. of the world's population, it produced, according to the last census, 22 per cent. of the world's wheat, 30 per cent. of its gold, 32 per cent. of its coal, 33 per cent. of its silver, 34 per cent. of its manufactures, 35 per cent. of its iron, 36 per cent. of its cattle, 38 per cent. of its steel, 50 per cent. of its petroleum, 54 per cent. of its copper, 75 per cent. of its cotton and 84 per cent. of its corn.

"Though the United States has only a twentieth of the world's inhabitants, it has a fifth of the world's stock of money and a fourth of its gold coin and bullion. The United States has two-thirds ($14,000,000,000) of the world's banking power—capital, surplus, deposits and circulation. Her preeminence in these directions has been obtained in the past twenty years. Between 1890 and 1904 the banking strength of the world grew 105 per cent. and that of New York City 190 per cent.

"How is all this wealth distributed? The farmers and planters of the country received last year more than $6,000,000,000 for their products. This equals the wealth of the entire country in 1845. The product of the country's mines for 1904 amounted to $1,500,000,000. The United States has a third of all the money deposited in the savings banks of the world. At the beginning of 1905 there were in the United States 212,000 miles of railroad, as compared with 300,000 miles for the entire world outside. The railroads earned $2,000,000,000 in 1904, and have in their employ 1,300,000 persons.

"Here is how the principal countries of the world stand in wealth in 1905:

United States	$110,000,000,000
United Kingdom	55,000,000,000
France	50,000,000,000
Germany	48,000,000,000
Russia	35,000,000,000
Austria-Hungary	30,000,000,000
Italy	18,000,000,000
Spain	12,000,000,000

Pneumatic Tube Development.

IF present plans are carried out Chicago, Ill., and Milwaukee, Wis., U. S. A., will soon be connected by means of a pneumatic tube through which mail and express matter will be hurled at the rate of about two miles per minute. The cities are a fraction over eighty-four miles apart and the trip will be made, it is estimated, in forty minutes. The tube will be eighteen inches in diameter and by means of it packages weighing not more than five hundred pounds may be transmitted. The line will be largely experimental, and upon its success will depend the construction of several other long-distance tubes.

There are now in operation in the United States more than three hundred pneumatic-tube plants, accommodating six thousand stations, requiring thirty-six hundred horse-power and costing $36,000 per day to operate. The longest of the tubes now in service is said to be the system radiating from the Chicago post-office, and connecting the post-office with the various railway and postal stations of the city. It is nine miles in length, is double-tubed all the way, has a capacity of three thousand letters each way per minute and cost $650,000.

The tube line between Chicago and Milwaukee is estimated to cost about $5,000,000, including all of the latest improvements in pneumatic-tube construction. A notable feature of the line will be that the carrier will be drawn through the tube by means of a vacuum created in front of it, and another will be the division of the line into relays of from two to three miles each. With the entrance of the carrier into a section power will be automatically cut off from the preceding section.

Shoes Sewed by Machinery.—Because of the wonderful development of American machines used in the manufacture of shoes, the hand-sewed shoe has practically disappeared from the market. The term "hand-sewed" is still used, but in nearly all cases it is a misnomer, as the shoes are machine-welted. It is still possible to get a genuine hand-sewed shoe in America, but the number of makers is decreasing yearly. Shoe machinery figures more largely every year in American exports.

Trackless Street Cars for Peru.—A New York house recently shipped a number of electric automobile street cars to Lima, Peru, where the same are to be used for public traffic. These are not omnibuses, but genuine cars, in shape, size and seat arrangement resembling the ordinary open summer trolley car in general use. They are fitted with solid rubber tires and are to be run on the street without rails of any kind.

Reform in Farm Wagon Construction.

THE users of American-made farm wagons throughout the world—a constantly increasing army—will be interested to know that a plan is on foot to standardize the height of wheels and tracking width. In a recent issue of the *Farm Implement News* E. W. McCullough says that the National Wagon Manufacturers' Association of the United States of America, a mutual organization that has existed for the past twenty years, has been planning a work of not only the utmost value to its members, but to the jobber and consumer as well, and their example might be profitably emulated by other branches of the vehicle and implement business. The general plan of the work at the present time, briefly stated, is the standardizing of the various parts of wagons which at present differ greatly, but for which difference no good, practical reason can be given.

A recent investigation was made to ascertain how many different heights of wheels were being furnished, and it was found that in the State of Illinois, where uniform standards could be as easily maintained as anywhere, ten manufacturers reported furnishing this trade twenty-one different heights of wheels. In Ohio eight manufacturers reported furnishing fifteen different heights, Missouri received sixteen heights from twelve factories, California seventeen heights from nine factories, Arkansas twenty heights from twelve factories and South Carolina thirteen heights from eight factories. When it is considered that these data were gathered in only a limited number of factories doing business in those States, and also that each height of wheel is required in a number of sizes and with various widths of tire, the extent of this great variety can only be faintly realized.

It has been found by careful investigation that it is practicable to reduce this mass of varying heights to uniform standards that will not only satisfy every reasonable demand for convenience, draft and strength, but which will in time add to economy of manufacture. Steps are also being taken to abolish odd and unnecessary width of tracks and to adhere strictly to the standard or narrow track, 4 feet 6 inches from center to center of tires, and wide track, 5 feet center to center of tires.

In establishing the standards suggested the manufacturers are using their experience of over a half-century in determining from a practical standpoint what heights will best serve the actual needs of the trade, there being no desire to urge arbitrary standards solely for convenience of manufacture.

Concerning the question as to how the consumer will look upon these changes, certainly after it is understood that these standards have been adopted universally, it will be seen that no one will profit to a greater extent than he. In standardizing the essential parts of a wagon the problem of securing repairs readily is solved and a saving of time and money is apparent.

Coreless Apples.

THE first coreless and seedless apples ever seen in New York were on exhibition in that city during the last week of February. The method of propagating the new apple was discovered by John F. Spencer, of Grand Junction, Col., after years of experiment. When the seedless orange was put upon the market, Mr. Spencer argued that a seedless apple must likewise be a possibility, and that whereas the seeds in an orange were a nuisance to the consumer, the core, seeds and seed pockets of an apple were responsible for a great waste, equal to nearly one-fourth of the fruit. So he set to work, and has finally succeeded in attaining the desired product. Already in his huge orchards at Grand Junction, Col., whence the apples that were on view in New York were shipped, 1,000,000 trees that will bear seedless and coreless apples have been planted, and nurseries are being arranged for in every State in the Union. Not, however, for five years will the young trees be bearing fruit in sufficient quantity to put the seedless apple upon the market.

In addition to rendering the whole apple edible, Mr. Spencer's discovery has a number of other advantages, not the least of which is that, the new-fangled apple trees having no blossoms, the danger of frost-blight is reduced to a minimum. The absence of the core, too, eliminates the presence of worms. Mr. Spencer declares that any known brand of apple can be grown without seeds.

This latest wonder of the horticultural world tastes no different from the apple with the ordinary complement of core and seeds. In place of the core, however, there exists in most of the apples a small round orifice for about a quarter of the apple's depth. But it is expected that when the trees become a trifle older this hole will close up, and indeed in some of the specimens now on display here this defect is scarcely noticeable.

A Record-Breaking Grain Sale.—In one week during the month of February 2,000,000 bushels of grain were purchased in Minneapolis, U. S. A., and shipped to Japan. The heavy demand for Oriental shipment of oats, corn and wheat still continues, though not to the extent of the above record-breaking week's figures. Heavy Oriental shipments of all kinds have prevailed at Pacific Coast ports as well as at the Atlantic ports of America for many months.

The Rambler in 1905.—Thos. B. Jeffery & Co., of Kenosha, Wis., makers of the Rambler automobiles, have issued a catalogue entitled "The Rambler in 1905." Upon request the firm mentioned will be pleased to send a copy of the catalogue to those interested.

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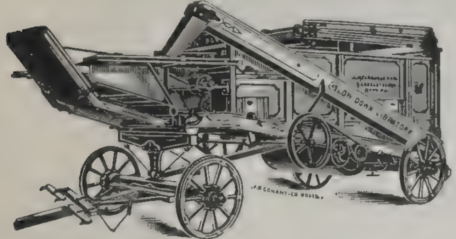

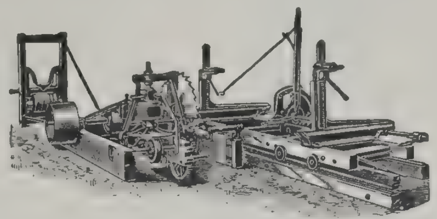

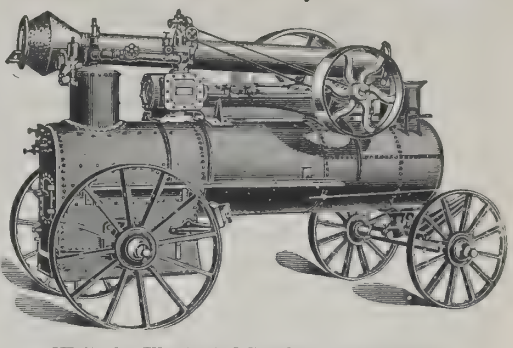

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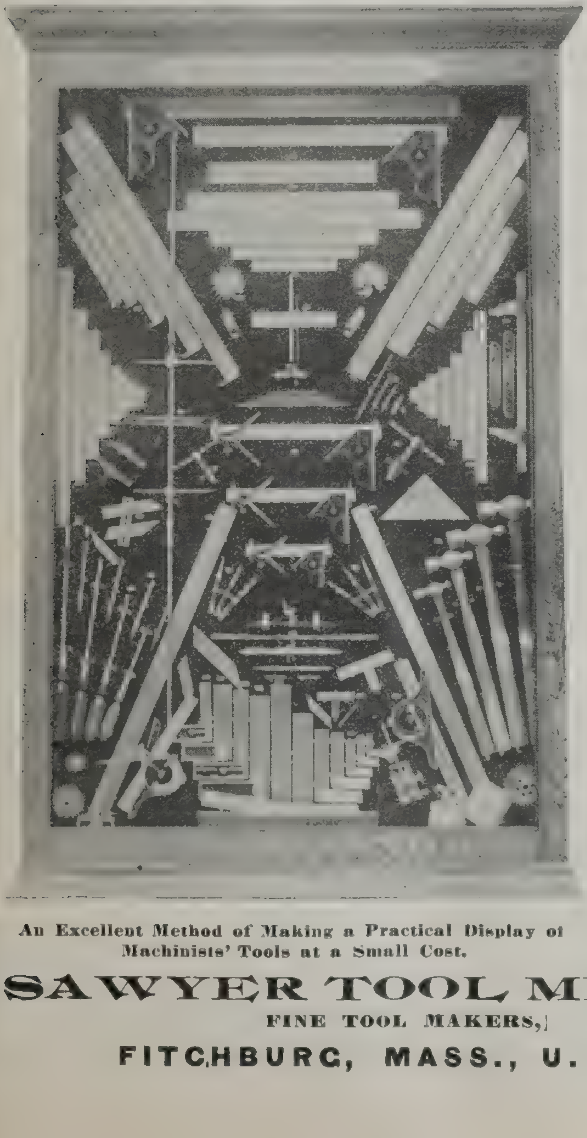

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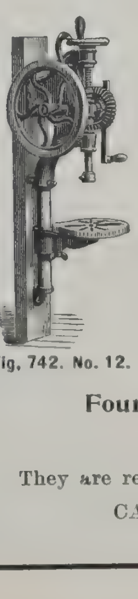

Fig. 742. No. 12.

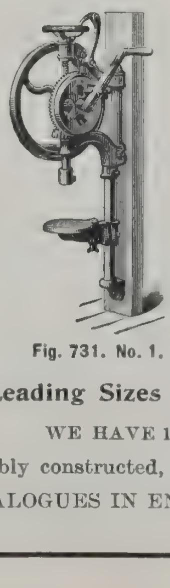

Fig. 731. No. 1.

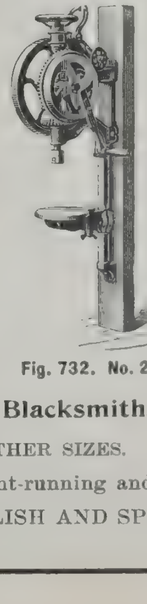

Fig. 732. No. 2.

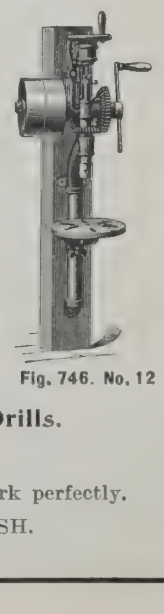

Fig. 746. No. 12

Four Leading Sizes of Blacksmiths' Drills.

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CATALOGUES IN ENGLISH AND SPANISH.

American Women Inventors.

THE American woman has done much in the way of invention and has shown her ingenuity in a thousand ways, as the records of the United States Patent Office show. The hospital bed and the reaping machine are the better for her work, and the question of irrigation, as applied to the great plains of the West, is of no less interest to her than the hygienic feeding bottle. Up to ten years ago it was the exception to find a woman's name in the patent books, and previous to that time the few patents applied for by women were, in some degree, expressions of vanity.

The first patent granted to a woman in America was dated in 1809 and was for a process of weaving straw. It was issued in the name of Mary Keis, but whether it was ever put upon the market or was otherwise used is not known. Six years later came Mary Brush with an application for a patent for a corset, and the application was granted. It may be added that there has been no one article so often patented by women as the corset, although the number has been somewhat lessened since the "straight front" came in.

After these first small efforts the American woman developed a wider interest in life and matters of fashion gave way to diet, and patents were issued to women for baking powders, ice-cream freezers and cooking utensils. With the success of these first patents women were encouraged and patents were taken out for rocking chairs, hospital bandages, for reaping and mowing machines, for conveyors of smoke and cinders, for dam and reservoir construction, for safety pins and hammocks.

The most important and profitable patents that have been issued to women were not intended to reform the human race or make either great fortune or fame, but were the outgrowth of need and experience and ability to cope with it. The woman clerk in the New York store who invented a profitable delivery system had felt the need of one, and knew all the practical details. That is why the invention was a success and why she made a fortune. The same is true of the woman who invented the flat-bottomed paper bag that is now used almost exclusively in American stores.

Most of the patents haven't cost overmuch capital, brain or time. They just make one little detail in life run smoother and are consequently of value. Of such conveniences may be mentioned glove buttoners, waist supporters and perforated hat-bands. But it is not only the housewife and the clerk in the store who has shown inventive ability. In many factories, if a woman has an idea in the way of an invention that will improve the work or lessen the cost of production, she will receive royalties for the use of her patent.

A large number of the most profitable inventions that have been put on the market in recent years have been patented by women, not women of great genius and wide scientific knowledge, but mainly clever working girls or women who are employed in stores or shops or are interested in agriculture. Each profession in which women have succeeded has brought to light a score of inventions to lessen labor and increase profits. Women school teachers have invented blackboards, erasers, desks, chairs, bookrests, school-bags and the like; women nurses and physicians have patented folding tents, hospital beds, facilities for improved sanitation and all manner of conveniences for invalids, and busy housewives have designed washing and ironing conveniences, fire-kindling compositions, butter workers and knives and forks and spoons for swift, easy work, besides measuring cups, churns and apple parers.

It is easy to discover the reason why an American woman should invent dress systems, improved methods of cutting patterns, helps in housefurnishings, novelties in the finishing of gowns and the dressing of hair, but it is likely to astonish even those who know her well to learn that the American woman has patented a complicated combination lock, a hammer-guard for firearms, a system of barrel-topping, a street-cleaning truck and various machines used in mining. But all these things have been invented by her and the story is found in the records of the American Patent Office where it may be read of all men.

A Long Distance Wireless Achievement.

A RECORD-BREAKING performance in overland wireless telegraphy was made late in February between Chicago and the naval station of Key West, according to advices received February 25th, at the Bureau of Equipment of the Navy Department, Washington. Communication has been established both ways between Key West and Chicago, a distance of approximately 1,060 miles.

The report made to the Navy Department says that the best results were obtained at night, and that the messages were received at Key West with great distinctness. Messages have also been sent between Key West and Cape Hatteras, a distance of about 800 miles.

The report says that on February 11th satisfactory communication was established between Key West and Hatteras, and Chicago was heard calling. A few nights later communication was had with both Chicago and Cleveland, the stations there being in touch, and also with a translantic steamer which was only 100 or 150 miles out of New York.

The results are highly pleasing to officials of the Navy Department and the sending of messages to Chicago and the obtaining of answers from Key West is regarded as a record breaker. Further distances have been made from land across water, but nothing so far over land alone.

Train Dispatching by Telephone.

THE recent announcement that on a part of the system of one of the most important American railroad companies trains will be dispatched by telephone instead of telegraph, serves to call attention to the increasing use of the telephone, an American invention, on the railways, says the *American Inventor*. While the dispatching of trains by telephone between station and station is yet looked upon as being in the nature of an experiment, in the yard containing the tracks leading into one of the largest railway terminals in this country, all the orders and messages to and from the towers of the interlocking switching system are now given by telephone. More than that, telephones have been installed upon the bridges which support the semaphores over the tracks, and in foggy weather men are stationed at these telephones. and by means of them are able to keep the men in the switch tower promptly informed of the approach of different trains.

The longest private telephone line in the world is about to be built by an American railway. It is announced that the New York Central Railroad will soon have in operation a telephone line of its own, extending from New York to Chicago, with private branch exchanges at the various division headquarters along the way. In the present stage of the development of telephony, one thousand miles is about the limit of the practicable use of telephone lines, and so the New York Central will be the possessor of a line as long as any which are in general use, although messages are in some cases sent much greater distances, notably from Omaha to Boston, 1,600 miles. But here, that the line may be successfully used, especial arrangements are made which would not be feasible in the ordinary course of business.

The invention of the telephone came at a time when steam railway systems were already equipped with elaborate telegraph service, and for this reason they were slow to adopt the new method for the transmission of intelligence. The electric roads, however, being the product of the last twenty-five years, eagerly seized upon the telephone, and to-day the cars on many of these lines are dispatched in accordance with orders sent from point to point by telephone, and apparatus has been designed of especial pattern to meet the needs of the electric roads. Portable telephone sets have been made which are carried in the cars and attached to telephone wires at the various crossing points. Portable sets are also coming into use on the steam roads, although not, of course, for the same purpose as on the electric lines. Wrecking trains now often carry telephone instruments, and others are found in the private cars of superintendents and other officials.

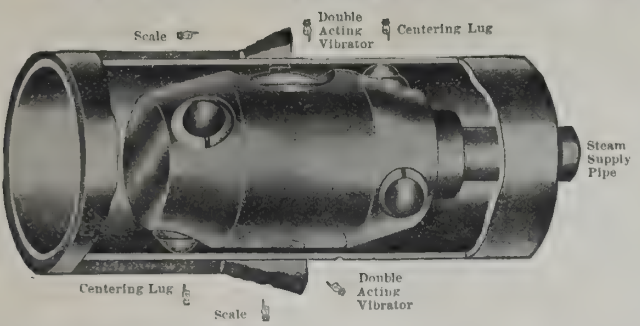
While the electric roads were the first to make extensive use of the telephone, in recent years so many steam lines have come to rely upon it to supplant the telegraph service, that the railroad department is now one of the regular branches of the business of the Bell system. Apparatus has been devised suitable for the composite use of the telegraph wires for the transmission of both telegraphic and telephonic communications, but the great railway systems are not content with the limitations which the use of telegraph wire imposes upon the telephone service, and in the cases of several leading companies, the policy is to use private lines of copper wire.

American Newspaper Pictures.

AMERICAN newspapers to-day are almost entirely illustrated by photography; and where reasonable care is used in the preparation of the plates, and the subsequent printing is not too rapid, results are often attained that almost equal the original photographs themselves, says the *Booklovers Magazine*. These pictures are half-tone etchings on zinc plates. The process consists in rephotographing the original photograph through a "screen," printing the new negative thus obtained upon a sensitized zinc plate, and then subjecting the latter to an etching bath of nitric acid. The screen is simply a glass plate bearing fine parallel lines crossing each other at right angles, thus forming a microscopic network. The number of lines in the inch varies according to the character of the work desired; for ordinary newspaper pictures a screen carrying sixty-five lines to the inch is generally used, though for fine magazine and book work the number frequently runs to 220. The purpose of the screen is to give body and substance to an otherwise flat and colorless photograph. After the screened negative has been printed upon the smooth surface of the sensitized zinc plate, the latter is carefully gone over with an inked roller. The ink is then wiped off with damp cotton, but an almost infinitesimal quantity of it adheres to the lines of the photograph. The plate is next treated to a gentle rubbing with "dragon's blood," a red, clay-like powder, the secret of which is jealously preserved by the trade. This accentuates the picture on the zinc. Then the plate goes into its bath of nitric acid, which eats away every portion of the surface that is not covered with ink and "dragon's blood." In other words, a reproduction of the original photograph is left in relief. To such a state of perfecton has the mere mechanical part of the process arrived that in most newspaper offices it is possible to put the finished cut into the form ready for stereotyping within an hour, or an hour and a quarter, after the original photograph has been developed. This takes lively and expert hustling on the part of photographers and etchers.

Bicycles for the Far East.—A vessel that sailed from San Francisco late in February for ports in Japan, China and the Philippines, had in her cargo American bicycles valued at more than $9,000.

THE TORPEDO REMOVES SCALE.



The Torpedo is similar to the pneumatic tools, but is used only for jarring scale from the *outside* surfaces of fire-tube boilers. This machine runs with steam or compressed air, tapping the inside of tube at 3,000 times per minute, breaks and jars off all scale from the outside. The Torpedo cleans the tubes which are impossible for a man to reach, and is saving hundreds of steam users many times its cost every year. Made for tubes 1½-8 inches in diameter. Order sample through any American exporter. Write to-day.

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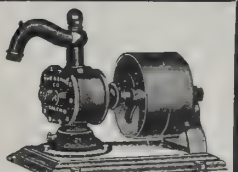

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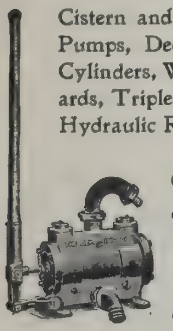

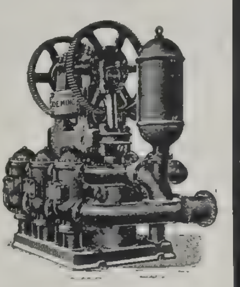

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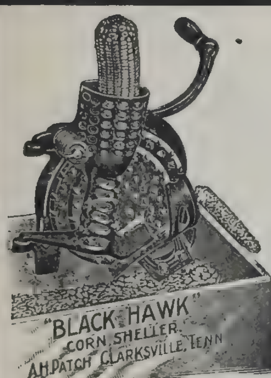

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Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of **Malleable Iron.** All bearings chilled. Attached to any box **Instantly by Clamps.**

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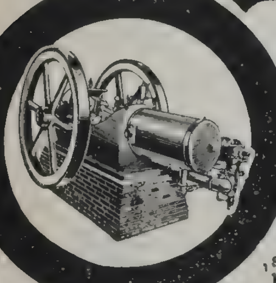

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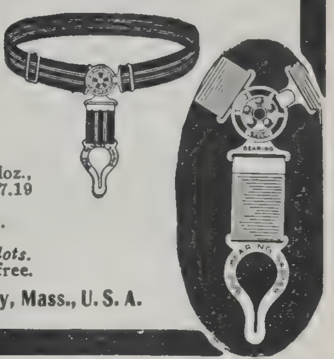

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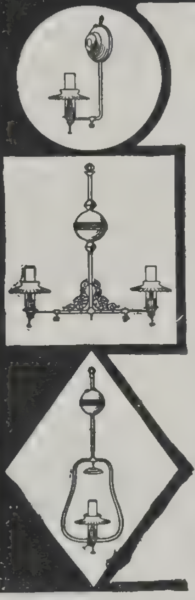

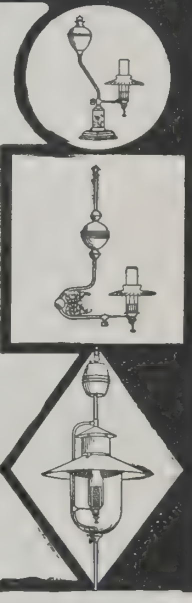

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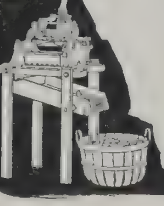

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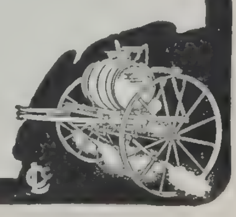

American Industrial Betterment.

MOVEMENTS for industrial betterment, as the efforts to improve the conditions of American artisans are termed, are under way in most of the great manufacturing centers throughout the United States, and on a more or less extensive scale. Employers are rapidly learning that the health, happiness and in some measure, social surroundings of the employees are worth looking after. One of the cities in which this movement has attained considerable proportions is Dayton, in the State of Ohio.

When a person applies for employment in the factory in Dayton where the industrial betterment movement mentioned is in progress, one of the first requirements is that he shall submit to a physical and mental examination. The reasons for the physical examination are that the company desires to have only strong and healthy men and women in its employ, and, moreover, it endeavors to protect its employees from all contagious diseases. A special study of means to promote the health of the employees is constantly under way. A physician is employed by the company and is at the call of all employees while they are in the factory and without cost to them. He conducts classes in first aid to the injured, and is aided in his work by two trained nurses. The latter keep in close touch with the women in the factory and are in charge of the "restroom" to which the female employees are removed when ill.

Ventilation and light in the factory are carefully looked after, and were closely studied when the plans for the buildings were drawn. Sanitary rules of all kinds are enforced in all departments, and in the polishing-room the air is changed every fifteen minutes throughout the day. Every building has its bathroom with tubs and shower appliances, and employees are given company's time for bathing.

Dining-rooms are maintained in the factory, where employees may secure warm luncheons at a nominal charge. Lectures on food and health are frequently given in the assembly hall provided for such purposes and to which all of the employees, irrespective of age and sex, are invited. All of the known hygienic laws are observed throughout the factory. The employees maintain a relief association, the members of which are entitled to sick benefits and the services of a physician.

The women employees are provided when at work with high-back chairs and foot rests, and are supplied with aprons and sleevelets to be worn in the factory. The women have a ten-minute recess every morning and afternoon and leave the factory at night ten minutes before the men. The men have a league that is the means of providing all kinds of outdoor athletics for the male workers.

America as a Coffee Consumer.

AMERICA consumes practically one-half of the coffee entering the world's markets, speaking in general terms. The importations of coffee into the United States in 1904 amounted to practically 50 per cent. of the coffee exported by the coffee-producing countries of the world, and more than 94 per cent. of that importation was retained in America for domestic consumption. The coffee retained in the United States in 1904 for consumption amounted to more than a thousand million pounds and was valued at $81,000,000.

According to figures issued by the American Department of Commerce and Labor the total importation amounted to 1,117,000,000 pounds, and there were exported from the United States during 1904 a total of 64,256,947 pounds of coffee of foreign production, so that the consumption in America during the year was approximately 1,053,000,000 pounds. The figures of the world's production of coffee in the coffee year 1903-4 show that the coffee exported from the various producing countries of the world, and therefore the quantity entering the world's markets during that year was, in round numbers, 2,260,000,000 pounds.

Changing Styles in Shoes.

IT costs a manufacturer several hundred dollars to change the style of a shoe, according to an authority quoted in the *Shoe and Leather Gazette*. When a manufacturer makes such a change he must have the lasts on which his men are to work. Assuming that he had one hundred pairs of one style of shoe in process of making and in six different sizes in that style, it is evident that he would require six hundred pairs of lasts in that one style alone. Then he must change his patterns for the tops, change the heels and make other alterations. It will be readily seen that if many styles are changed a big upheaval in the factory results.

The last makers make the styles as well as the lasts, the authority continues. Each concern has its modelers and if one manufacturer puts on the market something that attains popularity, all the others are likely to follow. The last makers are always working on, the retailers are constantly asking about and the consumer is always looking for new styles.

Big Diamond Cut in America.—The great diamond known as the "Excelsior" or "Jägersfontein," was imported into the United States last year and cut up into ten diamonds, which weighed from 13⅞ to 68 carats each. The original gem weighed 340 17/32 carats and was the whitest of the world's large diamonds. This diamond was the largest known until the recent wonderful discovery in South Africa.

A Carriage Manufacturing Center.

ONE of the world's great centers in the building of carriages and family vehicles is Cincinnati, O., U. S. A., according to a writer in the *Carriage Monthly*. In that city there are sixty carriage and accessory factories that have a capacity of two hundred and fifty thousand vehicles per year, worth $12,000,000. Eight thousand men are employed and the invested capital amounts to about $15,000,000. The carriage industry of Cincinnati has increased in volume from year to year, because, perhaps, of the location of the city within a comparatively few miles of the center of population of the United States. A large number of the vehicles manufactured are exported.

Cincinnati carriage builders devote their attention mainly to the manufacture of light pleasure vehicles, of different prices and in all grades. The trade can be supplied with most anything in the vehicle line from a two-wheeled cart up to the finest landau. A notable feature is the continual improvement each season in style. This stimulates the trade and continues to call the attention of the dealers to that market. As to the accessory or supply people, Cincinnati is a large center and an important factor in the market. A large number of jobbing houses and manufacturers' agents, with factories turning out springs, axles, trimming goods, etc., leaves nothing for the manufacturer to purchase elsewhere, and the large facilities of these numerous institutions enables them to sell to other carriage factories throughout the country.

American Machines in a British Arsenal.

THE British War Office has recognized the efficiency of American machinery by means of an order for eight machines for the manufacture of artillery carriages and wagon wheels, that was placed with a company in Defiance, O., U. S. A. The machines have been delivered and in speaking of their work a London newspaper said: "So superior are they in the matter of rapid work to our old methods, that the arsenal can now turn out ten times as much finished material as it could do previously. Both Russia and Japan have for some years adopted these wonderful engines, and as they were being supplied to other great military powers of Europe, it was deemed advisable by the War Office to place itself on level terms with these countries.

"The authorities, however, did not order the machines until they had sent a special commission around to all the likely firms of machine manufacturers in Britain to see if similar instruments could be obtained at home. It was found that nobody made them in England, and the one or two firms willing to make them wanted such big prices that the Government found itself compelled to go to the only firm in the world which makes a feature of this special article for the benefit of warlike administrations."

Heavy Steel Car Orders.—The steel freight-car-building industry in the United States bids fair to eclipse all previous records in the output for the present year. Orders booked and in prospect already foot up a total of more than one hundred thousand cars.

Motor Boats on the High Seas.—The great strides that are being made in the usefulness and efficiency of motor boats in America is evidenced by the fact that two cruises of considerable length are to be undertaken by members of the American Power Boat Association next summer. The first will be an ocean race with the end at Marblehead, Mass., U. S. A., and the other will be from the port of New York to a Canadian point on the St. Lawrence River.

In Urgent Need of American Goods.—The demand in China for American goods is steadily increasing and a feature of the call since the present year opened is that many shipments are being made by rail from Atlantic seaboard and interior points to San Francisco, a distance in many cases of almost three thousand miles. The necessity for the goods is so great that the buyer is willing to incur the expense of rail transportation when earlier delivery is thereby assured.

American Machinery in Formosa.—According to a report by Fred D. Fisher, American Consul at Tamsui, Formosa, the electric plant that is now in course of construction near Taihoku on the island mentioned, will be equipped with American machinery, including turbines and generators. The total cost, including the construction of a canal for water-supply purposes, will be approximately $175,000. The plant will supply power for lighting the cities of Taihoku and Tamsui, and for operating an ice plant, saw mill and other works in Taihoku.

American Bridge Material for Guatemala.—An American steel company has received the contract for the material to be used in the construction of bridges on the projected Guatemala Northern Railway, a Central American line that will extend from Port Barrios, via Guatemala City, to the Pacific Ocean. The contract is valued at about $500,000. The material will be shipped from Baltimore, Md., on specially chartered steamers and will be discharged at Port Barrios. The same company is also making the rails for the railway, and has already delivered enough for about fifteen miles of track. Several engines and cars for the road are also being constructed in the United States.

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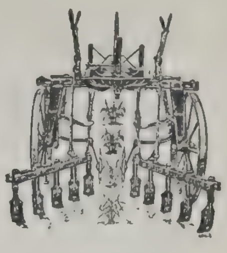

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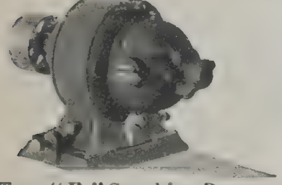

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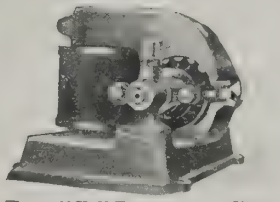
Price, each, - $15.50



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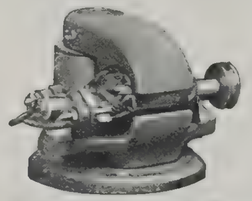

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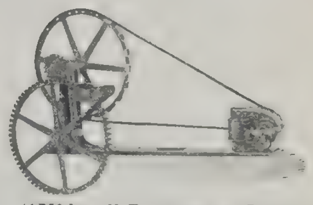

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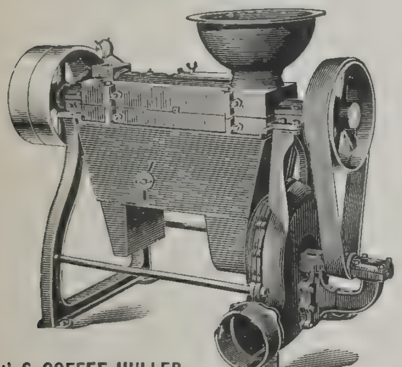

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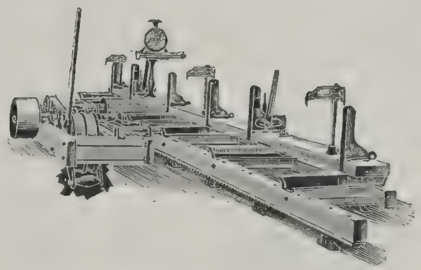

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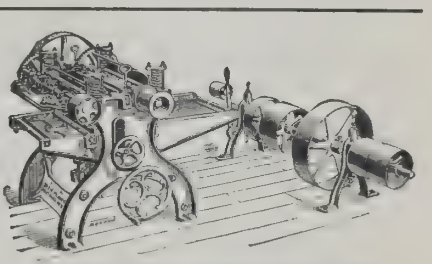

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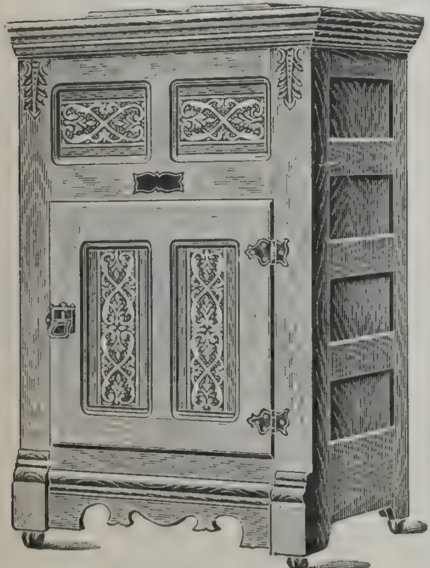

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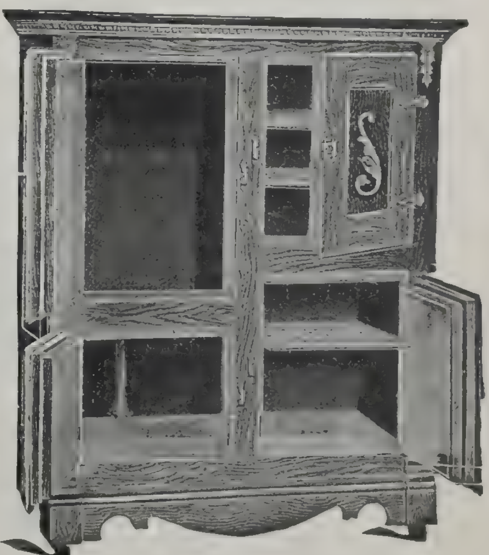

Economic Refrigerator No. 204.

A Record-Breaking Iron Trade.

NEVER in the history of America's iron industry has business been more brisk than at the present time. The blast furnaces and mills of the country are working at high pressure, far surpassing the great boom of 1899-1902. Six months ago the pig-iron output of United States mills was only a little more than a million tons a month. For the two months of the new year the output has been nearly doubled and the demand shows no signs of abatement.

The upward movement of the pig-iron trade in the United States was first noticed early in October last. Since that time the mills have been steadily increasing this production and yet the amount of stock on hand to day is much smaller than on January 1st and is steadily decreasing. The *Iron Age,* speaking of the situation, says it is "astonishing." The fact that in spite of this enormous output of pig-iron no surplus has accumulated shows that the finishing factories are using immense amounts and that the output is going into actual consumption. The purchases of the finishing mills during the past few weeks explain the situation and show the expansion of the iron trade to be healthy and safe. The United States Steel Corporation early in February made a purchase of 25,000 tons of pig-iron and is already reported in the field for more. Other steel companies have recently bought iron in lots of from ten to twenty thousand tons. During the closing days of the month Alabama iron mills alone marketed 25,000 tons of the metal, while mills in Schuylkill district of Pennsylvania filled orders for the same amount. The largest pig-iron purchase reported is that of 75,000 tons by steel makers in what is known as the Philadelphia district. The list could be easily extended but these instances are sufficient to show which way the wind is blowing.

The whole situation in the iron trade in America is promising beyond all precedent and the best feature of the case is that these prosperous conditions are on a firm, substantial foundation. This foundation is none other than an unprecedented export demand for finished iron products coupled with a domestic consumption of heavy and increasing proportions.

America's High Explosive.

HUDSON MAXIM recently said, in the course of an article on the high explosive used by the Japanese forces in the Russo-Japanese war, that while Japan and other nations had powerful high explosives that were capable of creating great havoc when used in war, the best of them all in many ways. was possessed exclusively by America. He pointed out that all other explosives used for military purposes were some form of picric acid and that the shells with which they were loaded were not expected to pass through thick armor plate and explode within a war vessel, as was the explosive used by America. The name of the American explosive is Maximite.

Mr. Maxim goes on to say: "The battleship of to-day has reached the limit of thickness of armor under which it can float. Nevertheless, the modern high-power gun can now penetrate this armor; and we in the United States have produced high-explosive projectiles which are capable of penetrating the thickest armor of any battleship afloat, and which will not explode until they have passed through the plate, when they explode immediately behind the plate and inside of a war vessel. No battleship in the world can withstand such gunfire as this for more than a few moments. The main difference between the high-explosive projectiles employed by the United States Government and those employed abroad is that the foreign high-explosive projectiles are not expected to pass inside a war vessel. They have not accomplished as yet penetration of armor with high explosives. Their shells explode on impact. No high explosive used abroad would stand the shock of penetration of thick armor plate, because not sufficiently insensitive. On the other hand, no foreign nation as yet would be able to make use of Maximite if they possessed the secret of its manufacture, for the reason that they could not explode it with any fuse they have."

Americans as Money-Savers.

IN the United States there is about $3,000,000,000 deposited in the savings banks, according to a report of the American Bankers' Association, but this amount, large as it is, by no means represents the total savings of the American people. For instance, the accumulations of the life-insurance companies, at least to a large extent, may be properly considered savings, and such accumulations now amount to more than $2,000,000,000. Again, the accumulations in the hands of the cooperative building and loan associations, amounting to some $600,000,000, may also rightly be termed savings, representing as they do small sums paid in periodically with the object of capitalizing such savings by owning a home. The accumulations in the school savings banks can undoubtedly be reckoned as savings, and they amount to no less than $500,000. The money invested in homes and homesteads by thrifty, hard-working American citizens is beyond calculation, but in the aggregate this must amount to a very large sum. The amount of interest that the people in the United States receive every year from their deposits in the savings banks alone amounts to about $100,000,000, and much of this is added yearly to the savings of frugal Americans.

Cost of Living for American Workingmen.

THE assertion is often made and so often reported that many people actually believe it, that the workingman in the United States while receiving better wages than his brother on the Continent of Europe or in England is in the end no better off because of the increased cost of living. Facts do not sustain the assertion. On the contrary, they show that the average American workingman not only lives well, but lays up money.

The last annual report of the Department of Commerce and Labor at Washington gives some interesting statistics on this subject, based on figures of the actual expenses and incomes of nearly 3,000 families. The average American wage earner, with a family of five, has an income of $830. He expends $327 for food, $107 for clothing and $100 for rent. His expense for heat, light, taxes and insurance is $67, while incidental household expenses take $26 more. After all this outlay our workingman spends $53 for pleasure, amusement, religion and charity. In this total are included items which might be curtailed or left out and which go to show that the American laborer is not "hard-up." These items are $12 for drink and $11 for tobacco. Our typical workingman has literary tastes, for he annually spends over $8 for newspapers and books. A few minor expenses swell the expense account, but the balance is on the right side of the ledger. The total expenditure of the average American workman is about $770, which shows that he actually saves some $60 a year.

American Jinrickshas.

THERE is but one factory in America, so far as known, that makes jinrickshas, but goods from that factory are sent to Japan, China, the Philippines and South Africa. The vehicles are made in four different patterns, suited to the countries for which they are destined. The bodies of the carriages are of wood and the wheels are of steel tubing, similar to that used in the construction of bicycles. Some of the wheels are of bicycle finish, with rubber tires, instead of steel tires, to facilitate the movement of the vehicle and lighten the load of the man between the thills. All of the jinrickshas have tops, of course, to protect the users from the intense heat of the sun in tropical countries.

The idea of making the vehicles for export purposes was suggested to the house now making them by an American firm in the Orient. The suggestion was approved and after considerable difficulty a jinricksha that was owned by the proprietors of a Japanese tea garden at an American seaside resort was borrowed and used as a model. Various improvements were made from time to time, until the vehicle is now, except in general outline, more American than Japanese.

Germans Like American Machinery.—That the Germans have faith in American machinery is shown by the records of exports from America for the first nine months of 1904 as compared with the same months of 1903, and, it may be added, the exports are increasing with the general recovery of industrial activity in Germany. Of sewing machines, machine tools, metal cutting and boring machines, pumps, typewriters and electrical machines, there were exported from America to Germany in the first nine months of 1903 2,611 metric tons and 4498 metric tons in the corresponding period in 1904. This was a great recovery from 1902, when our exports to Germany fell off to about one-third of the previous greatest volume, and it is in spite of German imitations of American machines and of the American factories established in Germany. The Germans have great faith in the American fertility of invention, and the excellence of American machinery.

Cattle Exports Expanding.—There is at present a phenomenal demand for American cattle for export. The recent shipments from Chicago have been about the largest in the history of the trade, according to the *Live Stock World.* The number tagged in one week in February was 11,039 head, against 6,820 a year ago. There has been no special improvement in prices across the water to stimulate such big shipments at this time, and there is no big fortune in the export business at the margin of profit now existing between Chicago and London, but still there is apparently enough in it to attract a good many buyers to it. Many Canadians are operating at the present time and that has helped to swell the volume of business greatly. The value of cattle exports from America in 1904 was nearly $42,000,000. The outlook is for a much larger amount in 1905.

Motor Well Borer.—A man in the State of California has invented what he calls a motor well-boring machine, an apparatus in which one gasoline engine is used to propel the machine from place to place and to operate the boring mechanism. The vehicle on which the borer is mounted is adapted to speeds of one and one-half, three and six miles per hour. Because of the very bad roads likely to be traveled the rear wheels are fitted with steel tires five inches wide which have riveted to them teeth three-fourths of an inch in length, to give a grip where traction is poor. When the wheels slip on the roadway and are unable to move the machine a steel cable 800 feet in length is reeled out and secured to a tree or rock. The motor is then thrown into gear with the cable drum and the vehicle is drawn forward. The operation is repeated as long as necessary. The complete machine weighs 4,559 pounds.

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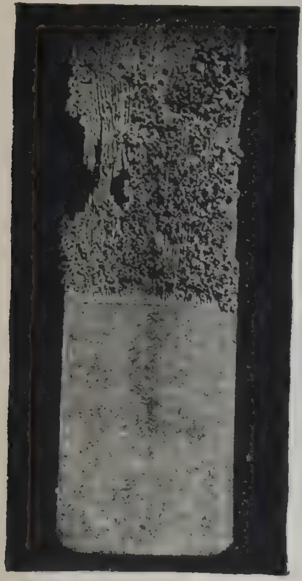

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Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint,** manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

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Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

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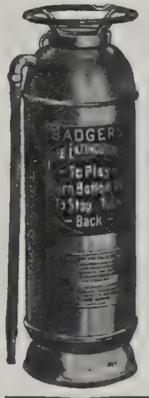

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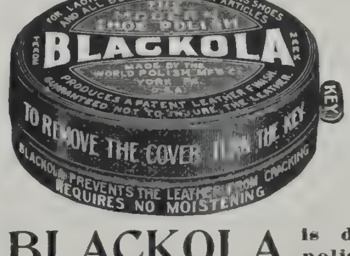
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THE WORLD POLISH MFG. CO.

YORK, PA., U. S. A.

Dealers are requested to write for sample.

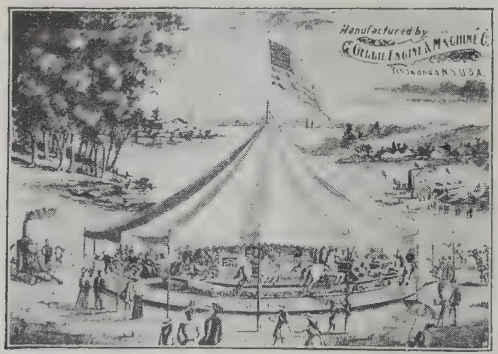
$600.00 in a day; $6,000.00 in a month; $20,000.00 in a season

is the report of an owner of one of our

CARROUSELS OR MERRY-GO-ROUNDS.

Suitable for County Fairs, Parks, Plazas, Pleasure Grounds, or any Public Place where young or old congregate.

Pays a larger dividend upon the amount invested than does any other known device made for the pleasure-loving public.


Manufactured by Gillie Engine & Machine Co. Tonawanda N.Y. U.S.A.

Full particulars, including weight, dimensions and cube, cheerfully given. Prices quoted f. o. b. steamer at N. Y. City. Our illustrated circulars, English or Spanish, mailed postpaid to any part of the world.

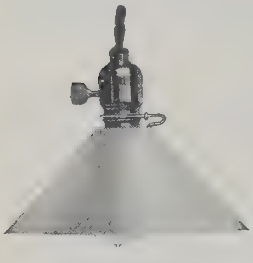
GILLIE ENGINE AND MACHINE CO.

J. H. RUMBOLD, Proprietor,

TONAWANDA, - - - - NEW YORK, U. S. A.

Cable Address: "Merrygoround," Tonawanda. Western Union Code.

"FOR THOSE WHO WANT THE BEST."



Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:

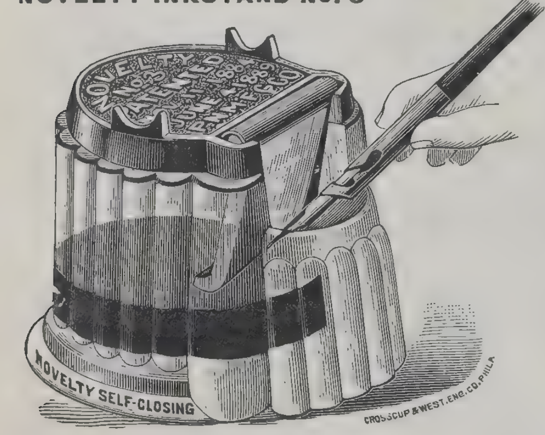
Upon receipt of **$40.00** in U. S. gold or its equivalent, we will box and deliver f. o. b. cars at New York, five gross of these shades in assorted sizes.

APPLIED DEVICE COMPANY, Springfield, Mass., U. S. A.

PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3


NOVELTY SELF-CLOSING
CROSSCUP & WEST. ENG. CO. PHILA.

American Novelties

NOVELTY (SELF-CLOSING) INKSTAND No. 1 (large), retail, - **75 Cents**

NOVELTY (SELF-CLOSING) INKSTAND No. 3 (small), retail, - **35 Cents**

PATENTED SPECIALTIES FOR EXPORT.

All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of *Sydney, Melbourne, Adelaide, Barcelona* and *Paris,* for novelty, workmanship, finish, simplicity, utility and cheapness.

WHOLESALE PRICE LIST.

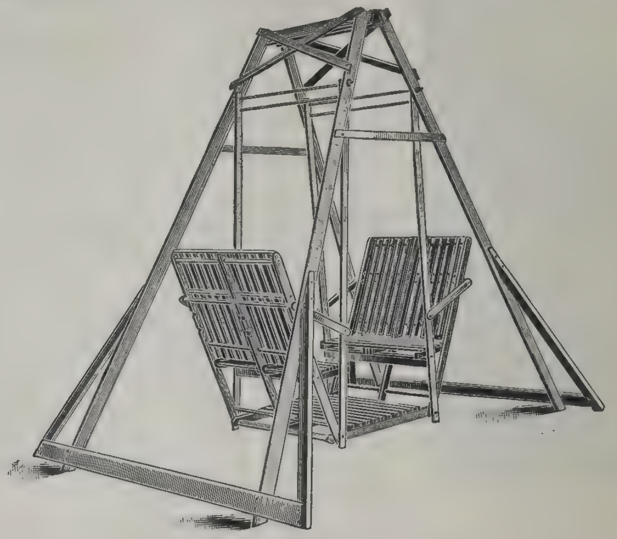
Novelty Paper Fastener, $4 doz.; Keystone Paper Fastener, $6 doz.; Original Paper Fastener, $12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, $1.50 doz.; B B C Paper Clip, $1.50 doz.; Balancing Board Clip, $2, $2.25, $2.50 doz.; Upright Paper Clip, $1.50 doz.; Accumulator Bill File, $1.50 doz.; Standard Pen Rack, 1.75 doz.; Spring Folding Pen Rack, $2 doz.; Combination Paper Weight and Clip, $4 doz.; Pocketbook Postage Stamp Holder, $1 doz.; Automatic Fountain Penholder, $1.50 doz.; Novelty Inkstand No. 1, $6 doz.; Novelty Inkstand No. 3, $3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, $4 doz.; Novelty Hunting Knife, $8 doz.; Novelty Pocket Screw Driver, $4 doz.; Artist's Rotary Kit, $5 doz.; Self-locking Door Indicator, $2.50 doz.; Madame Louie Hair Crimper, $2.50 great gross; Novelty Stitched Hair Crimper, $1.50 great gross; Automatic Fisher, $1.50 doz.; Automatic Towel Holder, $1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, $4.80 doz.; Keyring Door Securer, $1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., $1.25 and $1.75 doz.; The Masticator, $1.75 doz.; Duplex Can Opener, 80c. doz.; Universal Wardrobe Shelf Bracket, $1.50 doz.; Double Match Box, Bracket, $2 doz.; Universal Washer Cutter, $8 doz.; Novelty Pen Puller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

MICHAEL'S LAWN SPECIALTIES

Have been on the market over 46 years, and have successfully stood the test of time.

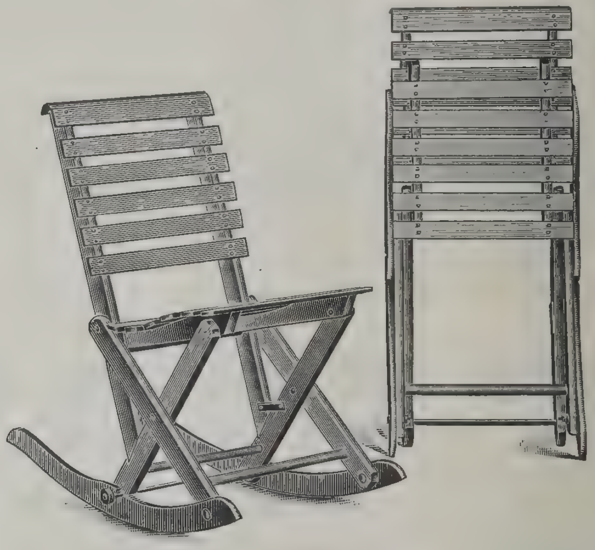
Our Motto Is: QUALITY in Every Instance.



New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal All parts are bolted or screwed. We use no nails except in chair slats No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen $30.50

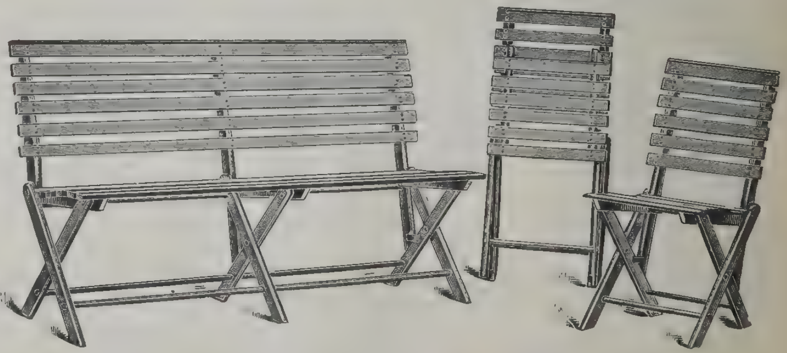


Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

Price, per dozen................................ $9.00



Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen................................$18.00

Six Folding Chairs, crated containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen................................ $6.00

NOTE.—The prices above quoted are f. o. b. New York City.

We also make the Michael Porch and Lawn Reclining Chair.

C. H. MICHAEL MFG. COMPANY,

Cable Address, "Michael." Western Union Code.

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BUCKEYE IRON & BRASS WORKS,

DAYTON, OHIO, U. S. A.

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TOBACCO-CUTTING MACHINERY

For making Fine Cut, Smoking, Cigarette and Picadura Tobaccos.

HIGH STANDARD BRASS GOODS

For Engine Builders, Gas and Steam Fitters.

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BOILER COMPOUND

Is the **one** boiler fluid that has proven a success everywhere. Its **reputation** as a feed-water purifier and lime-scale decomposer is established, having been successfully used for over 20 years. Many of the largest steam users in America have used it **exclusively** for several years.

LAKE ERIE BOILER COMPOUND CO.
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All shipments are made in steel drums, eliminating all leakage. Packages weigh approximately 275, 380, 530 pounds net, billed as half, three-fourths and full-size drums. Foreign trade solicited through exporters, 96-page booklet mailed **free** upon request.

LAKE ERIE BOILER COMPOUND CO.,

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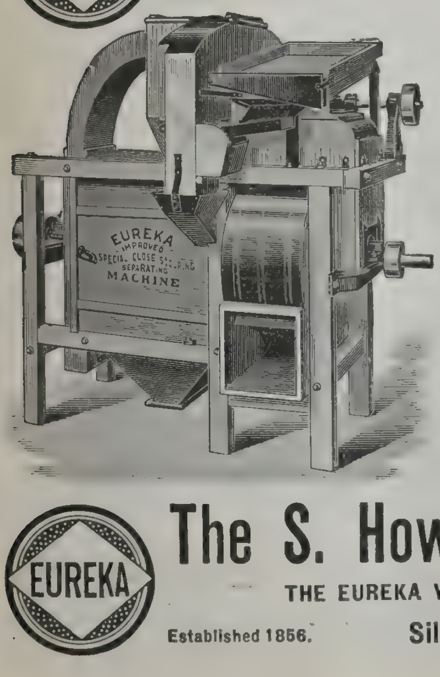
The S. Howes Co.

Manufacturers of

"EUREKA" Grain Cleaning Machinery,



Seed Cleaners, Flour, Bran and Feed Packers, Cement and Plaster Packers, Coffee Roasters, (Gas, Coal and Coke) Coffee Cleaners and Polishers, Coffee Hullers, Rice Hullers, Graders, Separators and Cleaners. Special Machinery for Flour Mills, Grain Elevators and Warehouses, Cement Mills, Rice Mills, Coffee and Spice Mills.

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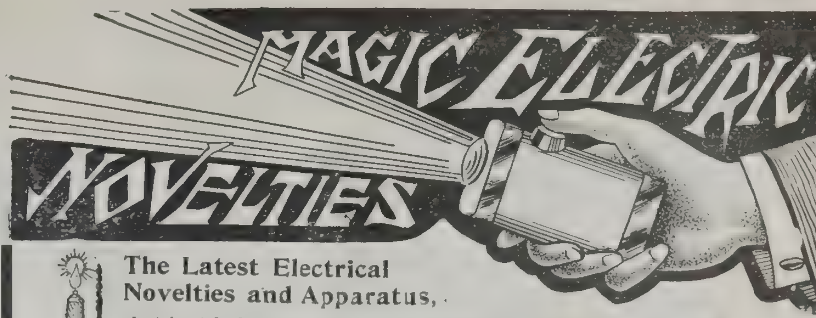
Established 1856. Silver Creek, N. Y.

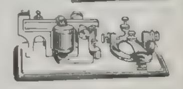


The Latest Electrical Novelties and Apparatus,

electric telephones, bells, clocks, dynamos, searchlights; save time in the house, office and factory. Electric motors, locomotives, scarfpins, canes, tops, coils, etc., furnish much instruction and amusement for old as well as young people. The magic electric goods are easy to handle, cheap, simple, safe, clean and never get out of order.

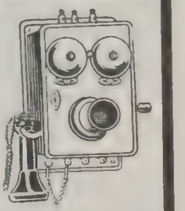
Electrical searchlights, as shown in illustration, only $1.00. Of great necessity in all parts where a safe and brilliant light is needed. Last for many years. Larger size, $2.00.

Also private telephones to be put in the house to connect with rooms and outbuildings, stables, barns, etc. Complete instrument with wire, tools, etc., and full instructions for installation, only $7.00.

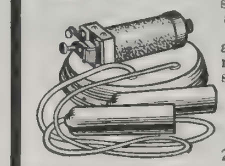


Telegraph outfit, excellent for learning telegraphy, as well as very useful. Price $2.25.

We also sell medical batteries, $2.50; dynamos and electric motors, 75 cents and up; electric clocks, $3.75; electrical locomotives with cars, trolleys and bridges, from $5.00 up. The best toy for children.



Send for our illustrated catalogue containing the description of over 100 useful electrical novelties and apparatus.



Our goods are the most suitable for agents abroad, and we will be pleased to enter into correspondence with agents wishing to increase their sales.

For further particulars write to

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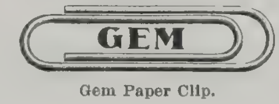
Drills for Hand and Power. Clamp Drills, 2 styles, 4 sizes. Turret Drills. Bench Drills. Track Drills. Drills with 1 to 10 spindles for ⅜-inch holes, with hand or power feed. Nut Tappers with 2, 3 and 4 spindles. Planer Chucks, round and square base, with jaws 6 in. to 30 in. long.

Correspondence solicited. Catalogue on "R" on application.



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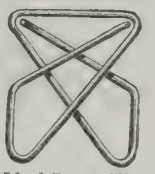
15c. per 100.



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"Pinch" Paper Fastener.
25c. per 250.

We Are Headquarters for

Paper Clips and Paper Fasteners.

Also Stationery Specialties and Novelties. Write for catalogue and our export prices and discounts.

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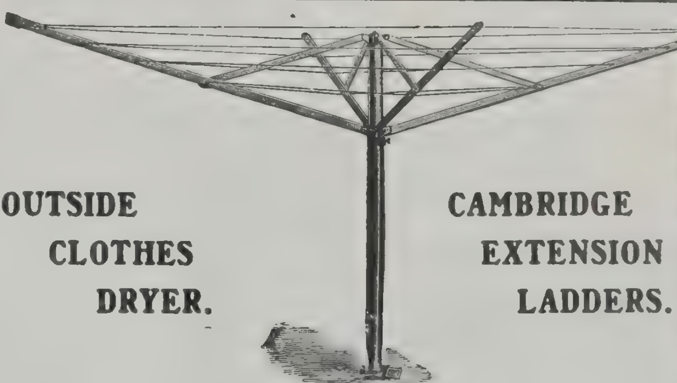

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CAMBRIDGE EXTENSION LADDERS.

C. W. H. Moulton & Co.

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Full line of Step Ladders, All Kinds of Single Ladders, Lawn Settees, Ironing Tables, Wash Benches, Clothes Dryers, Painters' Staging Outfits, Patent Fire Ladders.

Orders filled through commission houses.
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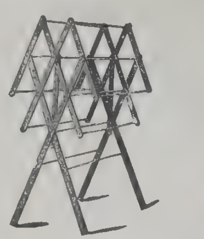


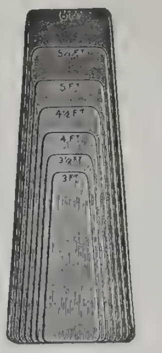
American Manufacturing and Novelty Co.

ERIE, PA., U. S. A.

—Manufacturers of—

LADDERS of all kinds
SETTEES,
LAWN SWINGS,
CLOTHES HORSES,
IRONING TABLES,
PASTRY BOARDS and
HOUSEHOLD WOODENWARE

FOR THE EXPORT TRADE.



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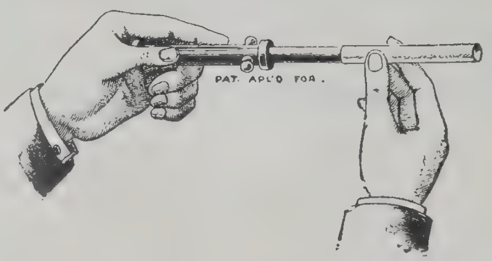
Greatest Invention of the Age for Cigarette Smokers.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It enables smokers to make their own cigarettes by using ready-made tubes which we supply with our machines. Plain or fancy tips can be had. Different grades of tobacco may be mixed to suit the smoker, and, while saving 300 per cent., he smokes at the same time the tobacco that suits his taste best.

On receipt of $25 in United States gold, or its equivalent, we will box, ready for steamer, and deliver f. o. b. cars New York, one gross Imperial Cigarette Machines, each in a box with 100 tubes. One dozen samples, postpaid, $3; one single sample, postpaid, 50 cents. Agents wanted.

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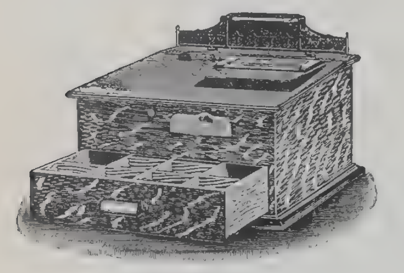

No. 85.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

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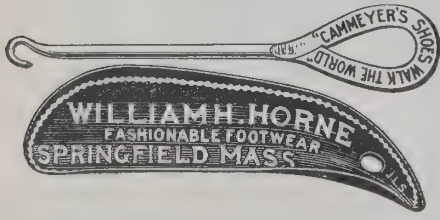

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Button Hooks, Shoe Lifts, Letter Openers, Key Rings, Etc.

Only factory of its kind in the United States. Orders filled through commission houses. Correspondence solicited. Send for Catalogue "A."

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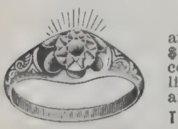
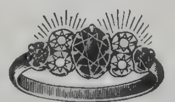
Rings that are Guaranteed to give wearer Satisfaction

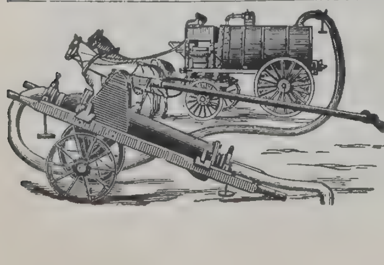
MADE OF ROLLED-GOLD SEAMLESS WIRE.



In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for $10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.



THE R. L. GRIFFITH & SON CO., Providence, R.I., U. S. A. Established 1879.



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Manufacturers and Exporters of

ODORLESS PUMPS AND APPARATUS.

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FOR THE HOME, LIBRARY, SICK ROOM, STUDIO, OFFICE, SCHOOL ROOM.

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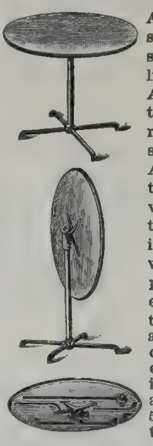
THE STANDORETTE.
MARK.

An Invalid's Stand, Easel, Reading Stand, Book Rest, Music Stand, Card Stand, Sewing Stand Drawing Board, all in one handsome piece of furniture. The top can be raised or lowered, and revolves around the pedestal; automatic adjustments for tilting the top at any angle; folds compact for export.

Box containing 6, gross weight, 150 lbs.; net, 100 lbs. Cubic feet, 6 1-2.

Box containing 12, gross weight, 300 lbs.; net, 200 lbs. Cubic feet, 14.

TIP TOP TABLE.



A first-class table, strong in construction, yet very light in weight. A handy table for the home, office, restaurant and summer garden. A half turn of the top places it in a vertical position, therefore occupying little space when set aside. It packs in the smallest space of any table yet designed and is specially constructed for export. The top is 30 inches in diameter: made of 5-ply veneer quartered oak.

The Allen Shaving Stand.

THE MIRROR is 8 x 10 quartered-oak frame.
RAISED OR LOWERED any height.
REVOLVES and TILTS either way.
A PEDESTAL is formed by removing the mirror.
It makes a nice reflector and dressing stand for the ladies.

All above articles made of steel tubing; finished, black enameled, oxidized copper or nickel-plated. Send for full particulars, prices, etc.

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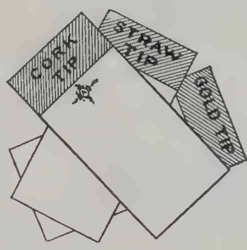

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CIGARETTE PAPER, CORK AND STRAW TIPS, ETC.
ALL KINDS OF LABELS, Printed and Embossed.

Machine-Made Cigarette Tubes.
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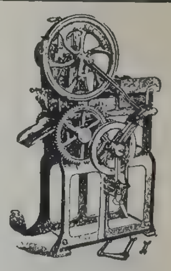
Small and Large Sizes.

ALSO CIGARETTE RIPPING MACHINES AND CIRCULAR KNIFE GRINDERS.



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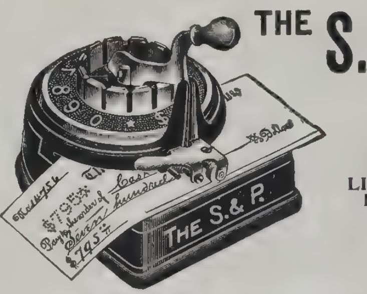

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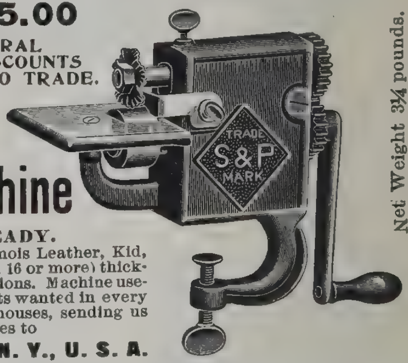
AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

$5.00

LIBERAL DISCOUNTS TO TRADE.



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Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

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Standard Bulge Pattern Box.

The Fletcher Manufacturing Co.

Manufacturers and Exporters of

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The Springfield Picture Top Box.

All styles and designs made to order. Orders filled through commission houses. Correspondence solicited.

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Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

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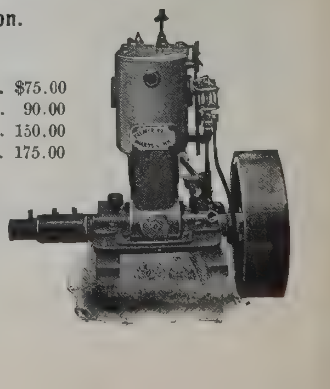

1½ H. P. Two-Cycle Marine Engine	$75.00
3 " " " "	90.00
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Four-Cycle Motors from 3 to 32 H. P. each.
Automobile Motors and Complete Launches.

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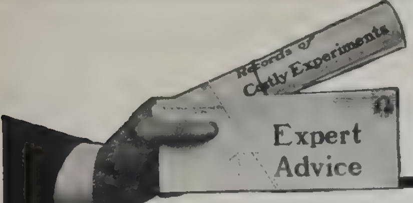
COS COB, CONN., U. S. A.



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Two Ways to Learn
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The prospective purchaser has two ways of determining the most desirable type of ice-making or refrigerating machine. He can learn at the "dear school of experience" or he can get our advice. During our years of experience we have built practically every type of machine. We have made tests of each as well as of the machines made by others. Our standard type—single-acting with vertical compressors—is the result. Don't waste your money. Use our experience. It is yours for the asking. Write for catalog K.

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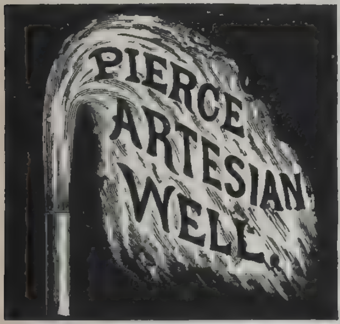
FOREIGN AGENTS: Arthur E. Enock & Co., 406-9 Birkbeck Bank Chambers, Holburn, London, W. C.
South African Address: Box 471, Durban, Natal.

Pierce Well Engineering & Supply Co.

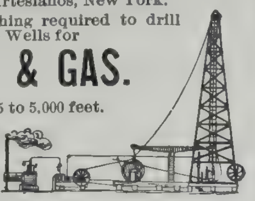

PIERCE ARTESIAN WELL.

136 Liberty St., NEW YORK, U. S. A.
Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.


Machine for 2,000 to 4,000 ft.

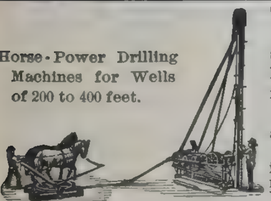
Also Special Tools for Soundings and Test Borings for **Water** and **Mineral Prospecting and Developing Mines**; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing Tools, Boilers, Engines, Etc.

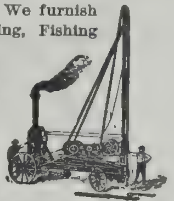
Complete Machines and Experienced Men sent to any Country or Clime. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

When writing, always state fully what is desired, giving greatest depth of borings required, if in Earth or Rock, and if for Water, Oil, Gas or Minerals.

Horse-Power Drilling Machines for Wells of 200 to 400 feet.




Steam Rigs for 200 350, 600 and 1,000 ft.

EAGLE MOP WRINGERS AND BUCKETS COMBINED

Are used in homes, public buildings, hotels, barrooms, barber shops, stores, churches, schools, clubrooms, office buildings, railroad stations and everywhere mopping up or washing is done.

DIRECTIONS FOR OPERATING:

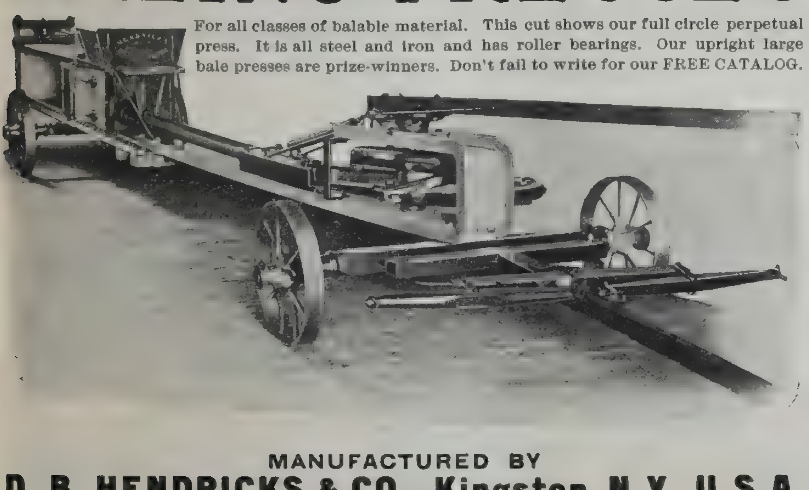
Put left foot on foothold to hold pail stationary, the other foot on lever; press lever down and rolls will close tightly together; pull mop straight out. Pressure obtained from 0 to 200 pounds, as may be required.

For sale by all hardware dealers, stove and tin stores, grocers, novelty and department stores. Crated for export, weight per dozen, 150 lbs.

Eagle Cooperage Works, Sole Manufacturers and Patentees, **Circleville, O., U.S.A.**

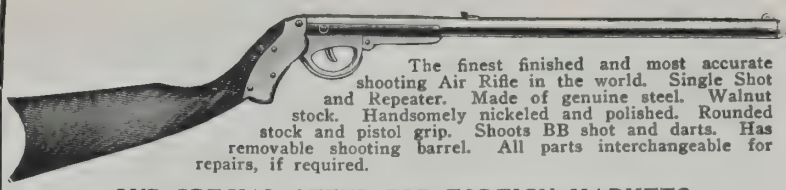
BALING PRESSES

For all classes of balable material. This cut shows our full circle perpetual press. It is all steel and iron and has roller bearings. Our upright large bale presses are prize-winners. Don't fail to write for our FREE CATALOG.



MANUFACTURED BY
D. B. HENDRICKS & CO., Kingston, N.Y., U.S.A.

The "KING" Air Rifle



The finest finished and most accurate shooting Air Rifle in the world. Single Shot and Repeater. Made of genuine steel. Walnut stock. Handsomely nickeled and polished. Rounded stock and pistol grip. Shoots BB shot and darts. Has removable shooting barrel. All parts interchangeable for repairs, if required.

OUR SPECIAL OFFER FOR FOREIGN MARKETS:

Upon receipt of **$25** in United States Gold or its equivalent, we will box and crate, ready for steamer, and deliver f. o. b. cars New York, three dozen "King" Single Shot Air Rifles and one dozen "King" Repeating Air Rifles. Four boxes in all, crated. Gross weight, 112 pounds. Net weight, 84 pounds. Dimensions, 12x15x33 inches.

The "King" Air Rifle sells quickly and satisfies the buyer every time. It's a gun-like gun and a reliable Air Rifle.

We are the originators and inventors of the Air Rifle and have the largest plant devoted exclusively to the manufacture of Air Rifles in the world. This of itself is strong evidence of the superiority of our Air Rifles.

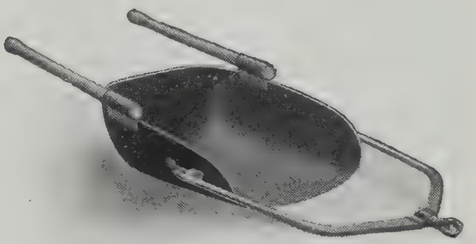
Order through any responsible exporter. Send for Catalogue of our full line of Air Rifles.

THE MARKHAM AIR RIFLE CO.,
PLYMOUTH, MICHIGAN, U. S. A.

Kilbourne & Jacobs Mfg. Co.

COLUMBUS, OHIO

Drag Scrapers
Wheel Scrapers
Wheelbarrows

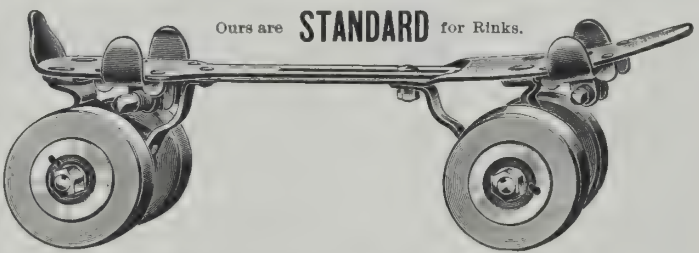


Of every size and description, for all purposes.

CATALOGUES FREE

We Make Up-to-Date Roller Skates!

Ours are **STANDARD** for Rinks.

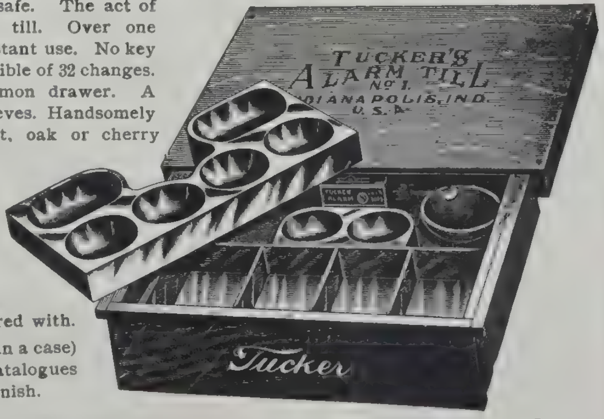


THE LARGEST LINE MADE. PLAIN AND BALL BEARINGS.

Stationary and Adjustable Foot Plates. Wood and Metal Tops. Play Skates for Children. Orders executed through commission houses. Catalogues mailed on application.

The Samuel Winslow Skate Mfg. Company, Worcester, Mass., U. S. A.
London Office: 8 Long Lane, Aldersgate St., E. C.

The Tucker Alarm Cash Till.


TUCKER'S ALARM TILL No 1. INDIANAPOLIS, IND. U. S. A.
Tucker

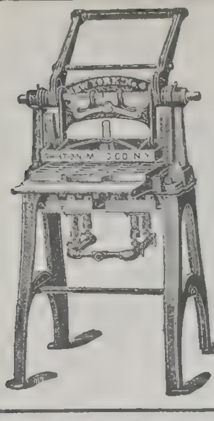
A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with.

Delivered (½ doz. in a case) free to vessel. Catalogues in English and Spanish.

TUCKER & DORSEY MFG. CO., Indianapolis, Ind., U. S. A.
Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.



RUBBER STAMPS

Can be made with good profit, and without previous experience on our

Patented Automatic Vulcanizer and Mould Press.

Full instructions with each outfit.

COMPLETE MANUFACTURING OUTFITS, $25 TO $100.

Send for Export Catalogue No. 1.

BARTON MFG. CO., 335 BROADWAY, NEW YORK, U. S. A.

QUALITY TELLS

The Artistic and Impressive Effects Obtainable in

METAL CEILINGS

will be more evident from a study of our **Large Catalog.** *Write for it.* **Designs** appropriate to every kind and class of structure.

New York Metal Ceiling Co.

538 &c. W. 24th Street, New York, N. Y., U. S. A.

"Enameltile" luxuriates Bath Rooms, etc., at little cost. This Catalog and information free, too.

"They Sound Different"

BELL BRAND

STEEL and WOUND

Musical Strings.

For Violin, Guitar, Mandolin, Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

NATIONAL MUSICAL STRING CO.,

New Brunswick, N. J., U. S. A.

TROWBRIDGE CHOCOLATE CHIP CO.,

MANUFACTURERS AND EXPORTERS OF

ORIGINAL CHOCOLATE CHIPS.

Most dainty eating confection in the world. Crisp and delicious.

Orders filled through commission houses. Correspondence solicited. Send for Circular A.

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T. B. Clark & Co., Inc.

Manufacturers of

RICH CUT GLASS

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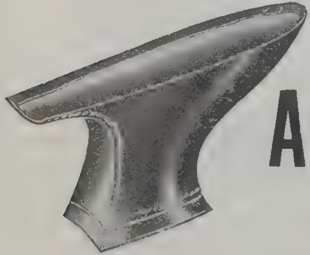

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Artistic Wood Heels

Orders filled through commission houses.
Correspondence solicited.

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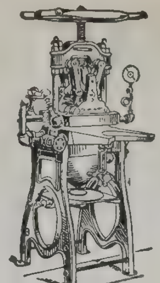


VULCANIZING OUTFITS

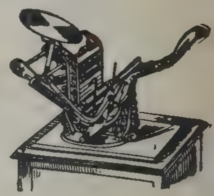
FOR THE

Manufacture of RUBBER STAMPS

A PROFITABLE ENTERPRISE.

Write for Catalogue No. 7.

Self-Inking HAND PRINTING PRESSES.



SOLID RUBBER TYPE.

STEEL DIES AND STENCIL SUPPLIES.

THE J. F. W. DORMAN CO.,

Box 993, Baltimore, Md., U. S. A.

METAL CEILINGS.

We are constantly improving and adding to our line. Have you our catalogue?

We Are Manufacturers of Sheet-Metal Goods "from Start to Finish.

WHEELING CORRUGATING CO., 47-51 Cliff St., New York, U. S. A.

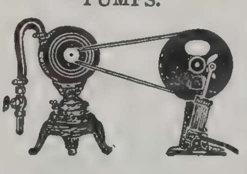
AGENTS WANTED.

WATER MOTORS AND FANS, ETC.

Adjustable Every Way While Running.

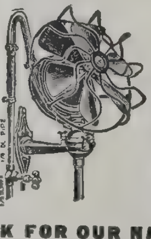
Patented June 28, 1898. Beware of Infringements.

PHYSICIANS' AIR PUMPS.



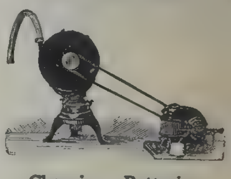
FOR COMPRESSING AIR.

FANS.



WATER MOTORS.

SMALL DYNAMOS AND MOTORS.



Charging Batteries. Operating Toys. Miniature Lamps.

LOOK FOR OUR NAME ON MOTORS.

The A. ROSENBERG CO., MANUFACTURER, **Baltimore, Md., U. S. A.**

Just the Thing for the Kitchen.

PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

Write for catalogue and discount.

Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2½ ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.

Paul Kitchen Cabinet No. 50.

PAUL MANUFACTURING CO., Fort Wayne, Indiana, U. S. A.

CLEAN. COOL, *HEALTHFUL.*

New Pompadour Roll Comb.

Celluloid Combs.

OUR SPECIALTIES ARE

Side Combs,
Back Combs,
Pompadour Combs.

Orders filled through commission houses.
Correspondence solicited.

G. W. RICHARDSON COMPANY,

NEWBURYPORT, MASS., U. S. A.

Pentucket Wood Heel Co.

MANUFACTURERS AND EXPORTERS OF

WOOD HEELS.

Also Fancy Covered Heels.

Orders filled through commission houses.
Correspondence solicited

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WESTON ELECTRICAL INSTRUMENT CO.

Waverly Park, NEWARK, N. J., U. S. A.

Weston Standard Illuminated Dial Potential Indicator. Style B.

Illuminated Dial Station Instruments.

These instruments are constructed upon the same general principle as our regular Standard Portable Direct-Current Voltmeters and Ammeters, but are much larger, and the working parts are inclosed in a neatly designed dust-proof cast-iron case which effectively shields the instruments from disturbing influences of external magnetic fields.

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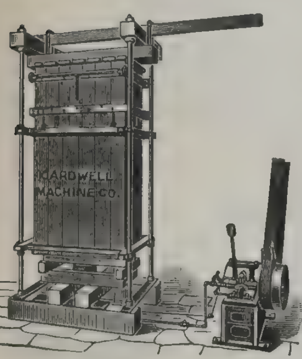
London—Elliott Bros., Century Works, Lewisham.
Paris, France—E. H. Cadiot, 12 Rue St. Georges.
New York Office—74 Cortlandt Street.

HYDRAULIC BALING PRESSES.


CARDWELL MACHINE CO.

For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from **$175 to $350**, according to size.

The Hydraulic Press is the most powerful press made.

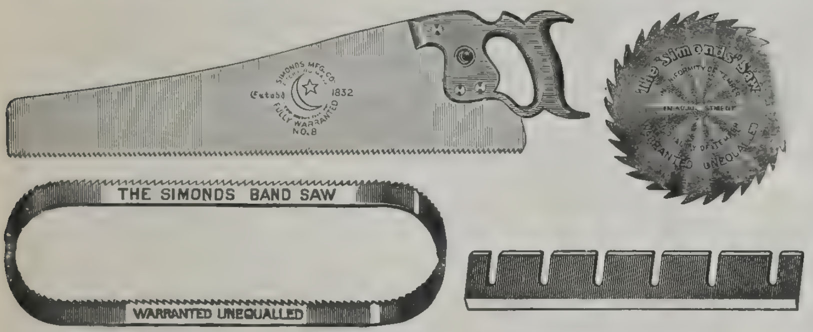
COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

Manufacturers of Smoking and Plug Tobacco Machinery.

THE CARDWELL MACHINE CO., Richmond, Va., U. S. A.

Simonds Saws and Knives

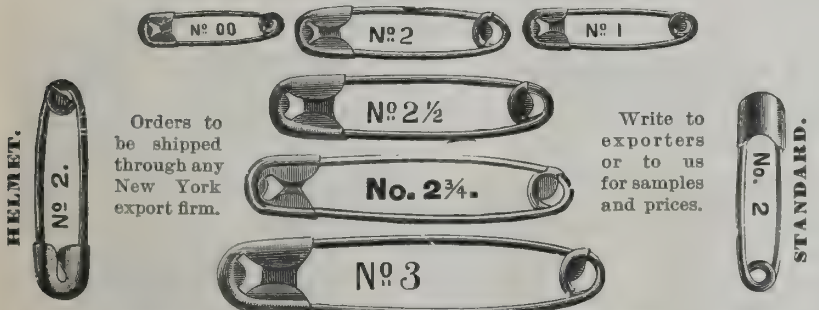
were awarded the **Grand Prix** and **Gold Medal** at the **Universal International Exposition of Paris, 1900.** All competition eclipsed.



SIMONDS MFG. COMPANY,

Fitchburg, Mass., U. S. A. **40 Murray Street, New York.**

STEWART'S
"CONSAPICO" DUPLEX
SAFETY PINS



Orders to be shipped through any New York export firm.

Write to exporters or to us for samples and prices.

HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
MADE IN NICKEL-PLATE AND JET BLACK.

CONSOLIDATED SAFETY PIN CO.,
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Indeliba Typewriter Ribbons and Carbon Papers

Where known are recognized as the standard of perfection. They are clean to handle, do not smut or soil the work, are long-lasting and are made from the best colors. Send for catalogue. Orders received through any New York exporting house at export rates.

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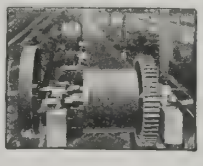
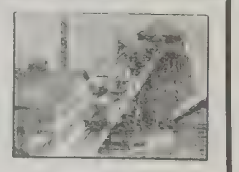


Rubber Belt Conveyor.



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Other
Jeffrey Specialties
Illustrated in Catalogues on

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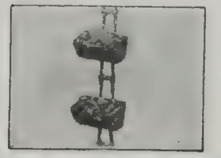
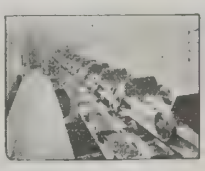
MAILED FREE.

The JEFFREY MFG. CO.
COLUMBUS, OHIO, U. S. A.
New York Office: 41 Dey Street.

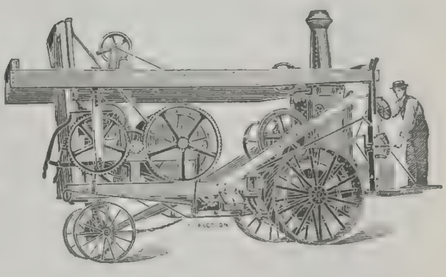


Standard Steel Elevator Buckets.



Coal Conveyor.

KEYSTONE DRILLER CO.



Our Catalogue No. 1 describes

Water Well Machines

of many sizes, both traction and non-traction, for wells 50 to 1000 feet deep, and gives full illustrated instructions for operating.

Catalogue No. 2 describes

Mineral Prospecting Machines

for exploring for Iron, Lead, Zinc, Coal and all minerals. Several sizes, both traction and non-traction. Also

Placer Gold Testing Machines

for assaying Alluvial Deposits, Lake and River Beds to bedrock. Can be used on boat. Also sectionalized Machines and Boilers for easy transportation to difficult places. They make 6 and 8 inch holes through anything and bring to the surface everything found. Full instructions for operating.

Catalogue No. 3 describes **Oil Well Machinery** for wells 1000 feet to 2500 feet deep. Several sizes, with full equipment and instructions for operating.

Our machines are the sum of all excellence, in use all over the world.

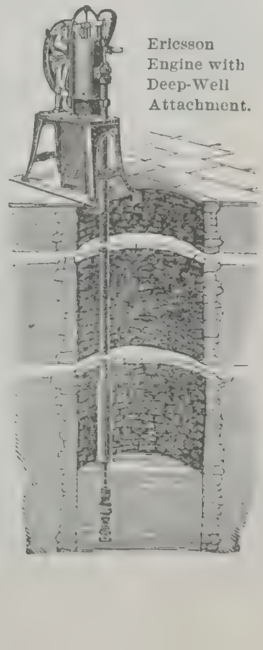
TOP QUALITY, BOTTOM PRICES, CATALOGUES FREE.

EIGHTH AVENUE, BEAVER FALLS, PA., U. S. A.

Cable Address: "DRILLER." Codes Used: Western Union, Lieber's and A B C, Fifth Edition.

A never-failing water supply with absolute safety, at small cost, may be had by using the

Improved Rider Hot Air Pumping Engine
AND
Improved Ericsson Hot Air Pumping Engine.



Ericsson Engine with Deep-Well Attachment.

Built by us for more than 30 years, and sold in every country in the world. Exclusively intended for pumping water. May be run by any ignorant boy or woman. So well built that their durability is yet to be determined; engines which were sold 30 years ago being still in active service. Send for Catalogue "Z" to nearest office.

RIDER-ERICSSON ENGINE CO.

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Teniente-Rey 71, Havana, Cuba.
CHAS. R. COWIE & CO., Agents, Rangoon, Burmah.
BAKER, BAKER & CO., Agents,
King Williams Town, So. Africa.

HOPS FOR EXPORT

OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., ½ lb. or assorted.

DOLE BROS.' "EXTRA" HOPS—In cases and packets same as above.

DOLE BROS.' "SPECIAL" HOPS—Put up in Duck-wrapped bales containing 10 lbs. each.

ALSO HOPS IN LARGE BALES FOR BREWERS.

Orders promptly executed through the leading commission houses.
Correspondence solicited.

DOLE BROS. HOPS AND MALT CO.,

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THE SPARROW CO.

MANUFACTURERS AND EXPORTERS OF

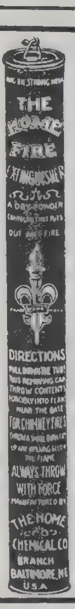
HIGH-GRADE CHOCOLATES

Orders Filled Through Commission Houses.

Correspondence Solicited.

Catalogue "S" will be sent on application to interested buyers.

BOSTON, MASS., U. S. A.



PROTECTION AGAINST FIRE.

HOME FIRE EXTINGUISHER

Consists of **Ornamental Tube** containing three pounds of a **dry powder compound** that will **blot out any flame,** arising from any cause.

This Modern Fire-Fighter should be in every FACTORY, BUSINESS PLACE and HOME. Endorsed by FIRE UNDERWRITERS, PRACTICAL FIREMEN and BUSINESS MEN.

One tube more effective, durable and less expensive than liquid extinguishers, which all require recharging, whereas, AGE, climatic changes in no way deteriorate the effectiveness of the **Home Fire Extinguisher,** which requires no mechanical aid or special knowledge in its application.

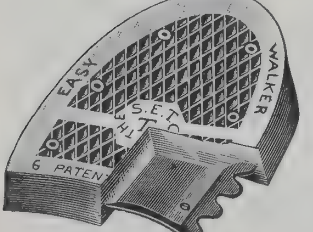
Sole agencies extended to reliable firms. No sample shipments of less than one dozen extinguishers. Special Export Price, $18 per doz. cash against shipping documents f. o. b. New York.

THE HOME CHEMICAL CO. BRANCH,

217-219 Equitable Building, . BALTIMORE, MD., U. S. A.

The Easy Walker Rubber Heels

Are Acknowledged the Best on Earth by All Practical Shoemakers.



Contain patent spring steel holding plate, which facilitates labor and saves the cost of cement; attached permanently in five minutes; made of fine Para rubber; will outwear two pair of leather heels.

Whole and Half Heels for Men and Women, Largest Line in the World.

Rubber Soling 1/8, 3/16 and 1/4 inch thick.

Orders filled through commission houses. Correspondence solicited.
Booklet "A" on application. Manufactured by

THE SPRINGFIELD ELASTIC TREAD CO.

Springfield, Ohio, U. S. A.

The superiority of American Solid Emery Wheels has long been conceded, and a prolonged investigation, reported upon in 1891, demonstrated that the Tanite Emery Wheel was superior to thirteen out of fifteen varieties, and has but one rival. The Tanite Wheels then tested were made exclusively of American Emery, mined by the Tanite Company, about 130 miles from its factory, at which the ore was prepared for use. It is safe to assume that the whole range of abrasive minerals was used in the other fourteen varieties, and the demonstrated superiority of the Tanite Wheel attests the value of its mineral ingredients as well as its processes. In these tests the minute removal of cast iron, at a pressure of 112 lbs. per square inch (averaged for all the wheels of fifteen varieties), was 1-40/100 ounces, while the average removal of the Tanite Wheel was 2-22/100. Since the date of those tests the net price of all Emery Wheels has fallen so much that the Tanite Company has given little prominence to the Tanite Wheel, diverting its efforts to other branches. This fact, with the novel colors and claims of other wheels, has caused the Tanite Wheel to be thought of as old-fashioned. It is old-fashioned, but even its old qualities made it the superior of all others, and these old qualities have been so supplemented that the Tanite Wheel of 1905 is as much superior to its old self as its old self was superior to all other wheels. Tests made in 1904 demonstrated an average removal per minute of 5-38/100 ounces of cast iron at a pressure of 110 lbs. The decreased prominence of the Tanite Wheel is not due to the impaired quality nor to the existence of any better wheel. The Tanite Company does not push that part of its trade as aggressively as it once did, because a large part of that trade has too small a margin of profit. Those, however, who desire to reap the largest profit from the use of Emery Wheels—those who will credit an Emery Wheel with money value because of inherent safety—those who are willing to pay a fair price instead of governing their purchases by the biggest discount—all those can well afford to discard all other makes and use only the old-fashioned—new-fashioned Tanite.

The National Emery Wheel Company

WORCESTER, MASS., U. S. A.

MANUFACTURERS OF

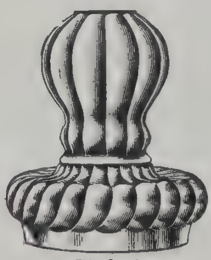
Emery and Corundum Wheels,

AND ALL KINDS OF

**Emery Wheel Machinery, Emery, Corundum, Etc.
Thin Elastic Wheels a Specialty.**

Orders received through commission houses. Correspondence solicited.

The Glow Night Lamp.



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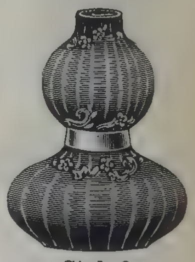
A SCIENTIFIC WONDER

200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, generated from kerosene oil.
The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.



Style 2.

THE GLOW NIGHT LAMP CO., Incorp., 73-75 PEARL ST., Boston, Mass., U.S.A.

A Fly Repellant.

Sample gallon can, $1.50.

Send for booklet giving particulars.

"NO-FLIES-HERE"

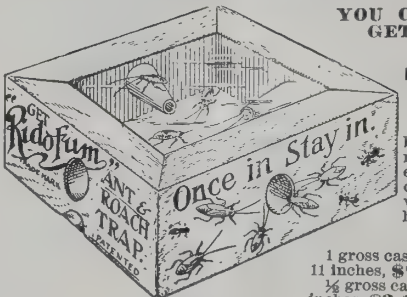
THERE IS NOTHING TO EQUAL IT.

Keeps Flies, Ticks and Insects off of Cattle, Horses, Mules, etc. Increases health and insures better work from Animals.

Effective, Economical and Cheap.

THE PRESERVALINE MANUFACTURING CO., Sole Mfrs., NEW YORK, U. S. A.

ROACHES and WATER BUGS



YOU CAN GET **"RID-OF-UM."**

TRADE MARK.

**It Is Easy if You Use the "RID-OF-UM" Trap.
A Sanitary Method of Destroying.
No Poisons.**

A careful study of the habits of all troublesome bugs usually found in stores, warehouses, hotels, restaurants, and sometimes in private dwellings, enables us to state with authority that when one of any kind of bug gets into the trap, all the rest will follow. Easily killed by dropping into fire or hot water. **Thousands in use.**

FOR INTRODUCTORY PURPOSES.

1 gross case, gross weight, 38 lbs. (17 kilos); size, 24½x16½x11 inches, **$7.00** (£1 9sh. 2d.) net f. o. b. New York.

½ gross case, gross weight, 20 lbs. (9 kilos); size 24½x16½x5½ inches, **$3.75** (15 sh. 8d.) net f. o. b. New York.

The Bennett Paper Box Co., Sole Maunfacturers, **Springfield, Mass., U. S. A.**

EVERY HEEL IS A SALESMAN.

THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

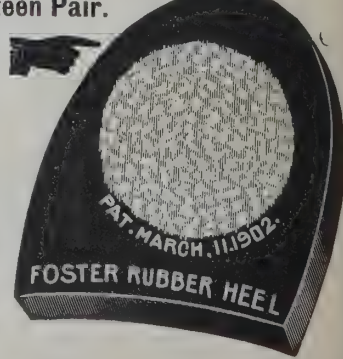
Every Pair Sells from Two to Fifteen Pair.

It is a RECORD and a FACT that one pair of FOSTER HEELS proved so satisfactory to the wearer that 15 pair have been sold on this one party's recommendation.

"ELASTIC TIP CO., Boston:
"Dear Sirs—I have worn your Foster Rubber Heels on slippery pavements, on ice and snow, and they *positively* do not slip. They are *simply perfect.* Yours truly,
"N. E. VAN VOORHIS, Newton."

"MERIT ALWAYS WINS"

And that's why people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.



FOSTER RUBBER CO., 370 Atlantic Ave., BOSTON, MASS.

AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

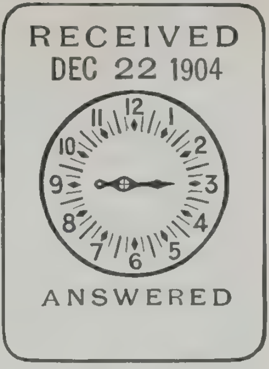
This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

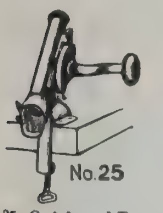
Price, with dates and printing die, as illustrated, or with any other wording that may be desired, **$3.50.**

A. A. WEEKS, 11 Gold St., New York, U. S. A.

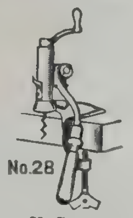
Manufacturer of Glass and Iron Inkstands and Office Stationery.

Send for Catalogue and Export Discounts.

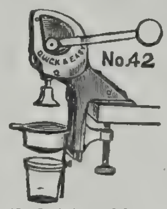




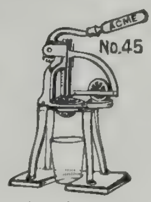
25. Quick and Easy. Cork Puller.



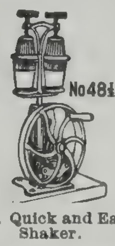
28. Samson Cork Puller.



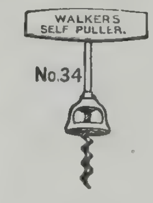
42. Quick and Easy Lemon Squeezer.



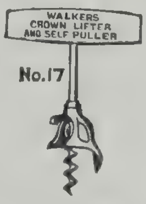
45. Acme Lemon Squeezer.



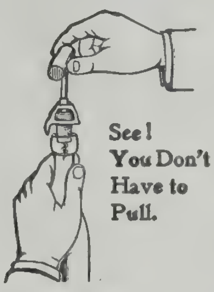
48½. Quick and Easy Shaker.



34. Self-Pulling Cork Screw.


WALKERS CROWN LIFTER AND SELF PULLER
No.17

17. Self-Pulling Cork Screw.



See! You Don't Have to Pull.

48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.

THE NEWARK LEATHER WASHER MFG. CO., NEWARK, N. J., U. S. A.

MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

Axle Washers for All Foreign and Domestic Axles. All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses. Correspondence Solicited. Catalogue B on Application.

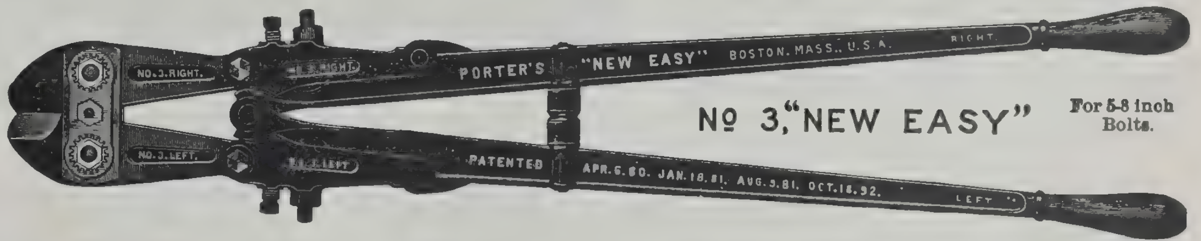
The "NEW EASY" BOLT CLIPPER

IS THE BEST.

MANUFACTURED BY

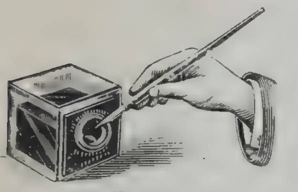
H. K. PORTER,

6 Ashland St., EVERETT, MASS.



Nº 3. "NEW EASY"

For 5-8 inch Bolts.



No. 7.

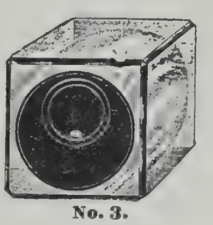
A FEW REASONS WHY

THE GARDNER

Is the Best Inkstand in the world.

The Gardner Inkstand is superior to any other make, for the following reasons: 1—It provides against evaporation, which soon earns its cost by the saving in ink. 2—Its peculiar construction prevents dust and dirt from getting in the ink, allowing it to retain its freshness as long as it lasts. 3—Absolute simplicity—there being nothing to get out of order.

Prices, 65c. to $1 35 each.



No. 3.

THE ROYAL INKSTAND.

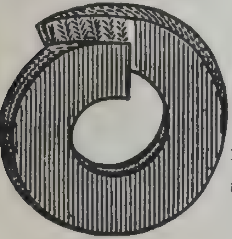
In point of simplicity, the ROYAL INKSTAND has no superior. Besides the glass reservoir, it is composed of only three parts—a rubberoid collar and an ink funnel and an arched diaphragm of soft rubber. These parts are all readily removable and easily separated from one another, without tools and without soiling the fingers.

No. 309. Royal, 25c. each.

Very Liberal Export Discounts.

C. H. NUMAN, Sole Mfr., New York City, U. S. A.

No. 30



GOULD'S STEAM AND WATER PACKING.

ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM

SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE GOULD PACKING COMPANY, EAST CAMBRIDGE, MASS.

ALBION CHIPMAN, TREAS.

J. C. F. PHINNEY, CUT SOLES, LYNN, MASS., U. S. A.

Orders filled through commission houses.
Correspondence solicited.

BROCKTON LAST CO. BROCKTON, MASS

Brockton Last Co.

Manufacturers and Experters of FINE **LASTS** IN ALL SHAPES AND STYLES,

FOR MEN, WOMEN, YOUNG MEN AND MISSES.

Orders filled through commission houses. Correspondence solicited.

BROCKTON, MASS., U. S. A.

EDWARD M. BLISS,

MANUFACTURER AND EXPORTER OF

LAMB'S WOOL SOLES

AND HAND-CROCHETED WORSTED SLIPPERS IN ALL COLORS AND SIZES.

Ladies in the United States buy the wool soles, crochet and sew the upper onto the sole, thereby making their own slippers for house wear Invaluable for invalids. Orders filled through commission houses, Correspondence solicited.

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LOOK INTO THIS
APW BRAND
TRADE-MARK REGISTERED.

A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.

The largest manufacturer of **TOILET PAPER** in the world.

CORRESPONDENCE SOLICITED.

LOW C, 32-FOOT REED

Church, Chamber and Concert Pipe Organ Reeds
A SPECIALTY.
Workmanship and Tone Quality Unexcelled.

Samuel Pierce Organ Pipe Co.,
READING, MASS., U. S. A.

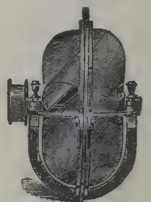
BARNEY COMPOUND VENTILATING WHEEL.

For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in France, Canada, Mexico.

FOREIGN AGENTS:
James Hill & Sons, Adelaide, South Australia. W. G. Hurdman Co., Ottawa, Canada.
Gothenburg Machine Co., Limited, Goteborg, Sweden.

BARNEY VENTILATING FAN WORKS, Dept. E, = Boston, U. S. A.



THE DAVOL RUBBER COMPANY, Providence, R. I., U. S. A.

Manufacturers of the HIGHEST GRADE OF RUBBER GOODS.

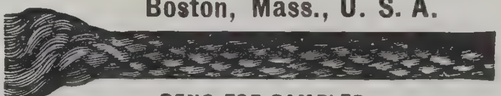
Air Beds,
Air Cushions,
Air Pillows,
Atomizers,
Bands,
Bandages,
Bath Caps,
Bed Pans,
Breast Pumps,
Bulbs,
Camera Sets,
Colon Tubes,
Cupping Cups,
Dental Dam,
Dilators,
Face Bottles,
Finger Cots,
Gas Bags,
Gloves,
Ice Bags,
Ice Caps,
Medicine Droppers,
Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,
Obstetrical Cushions,
Pessaries,
Plant Sprinklers,
Plaster Bowls,
Politzer Bags,
Rectal Tubes,
Rubber Bands,
Stomach Tubes,
Stoppers,
Syringes,
Teething Pads,
Teething Rings,
Tourniquets,
Tubing,
Umbrella Rings,
Urinals,
Water Bags,
Water Beds,
Water Bottles.

And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

SILVER LAKE COMPANY, The Original Manufacturers of **Solid Braided Cordage.**

Boston, Mass., U. S. A.

WINDOW SASH CORD,
RAILROAD BELL CORD, } COTTON, LINEN OR ITALIAN HEMP.
ARC LIGHT and TROLLEY CORD.



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THE BEST IS THE CHEAPEST:
CLOTHES LINES,
AWNING AND MASONS' LINES,
CHALK LINES, ETC., ETC.

Catalogue "A" on application. STEAM PACKINGS, SILVER LAKE & MILLER SOAPSTONE PACKING.

ACETYLENE GAS RANGES, HOT PLATES AND BURNERS.

SPECIAL OFFER ON TRIAL ORDER FOR EXPORT.

One each 4 Burner and Oven, and 2 Burner and Oven Acetylene Ranges. One each 1, 2 and 3 Burner Acetylene Hot Plates. One 4-Tube Acetylene Radiator. One Acetylene Mantle Burner, complete.

All the above sent carefully crated and boxed upon receipt of $50.00, current United States funds. Catalogue "C" on application.

Cable Address: "SATWEL," Cleveland.
Western Union and Postal Codes.

THE NATIONAL LIGHTING AND HEATING CO., Cleveland, Ohio, U. S. A.

MAINTIEN BROTHERS & ELLIOT, Plainville, Mass., U. S. A.

Manufacturers and Exporters of Solid Gold Front, Fine Rolled Gold Plate and Sterling Silver Jewelry.

New and Original Designs. Link and Lever Buttons, Studs, Scarf Pins, Hat Pins, Brooches, Silk and Metal Fobs.

☞ Every Piece Manufactured by Us Fully Guaranteed.

Orders Filled Through Commission Houses. Correspondence Solicited.

SOLID BRAIDED CORDAGE.

Trade Mark.
Massachusetts Brand.

Sash Cord,
Clothes Lines,
Railroad Cords,
Arc Light Cord,
Lariats, Etc.

SEND FOR SAMPLES.

Awning Lines,
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Chalk Lines,
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Trade Mark.
SAMSON BRAND.

SAMSON CORDAGE WORKS, - Boston, Mass., U. S. A.

INQUIRY OFFICE FOR NORWAY, SWEDEN AND DENMARK.
COLLECTION OF CLAIMS.
ASK FOR TERMS.

HEFFERMEHL & CO.,
ESTABLISHED 1895.
KRISTIANIA, NORWAY.

BOSTON FLOOR COMPANY, Boston, Mass., U. S. A.

——MANUFACTURERS AND EXPORTERS OF——

PARQUET FLOORS AND FLOOR FINISHES,

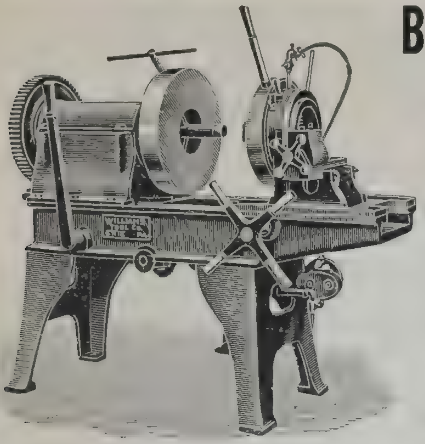
Also Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

Orders filled through commission houses. Correspondence solicited.

GOODSPEED MACHINE CO.
MANUFACTURERS AND EXPORTERS OF
WOOD-WORKING MACHINERY,
WINCHENDON, MASS., U. S. A.

Orders filled through commission houses. Correspondence solicited. Catalogue "G" on application.

Tub, Pail, Chair, Bobbin and Spool Machinery, Back-Knife Gauge Lathes, Cylinder Stave Saws, Stimpson's Dovetail Machines, Chair Seat Grooving Machines, Pail Handle and Clothes Pin Machinery, &c.



Built to Meet a Need

for a pipe-threading machine, to handle such work expeditiously and accurately. Built with a knowledge of what these needs have been and built to meet them squarely and fully. The machine here shown is our No. 3. It handles pipe from 1½" to 6". We make four other sizes that handle work from ¼" to 12". These machines have quick-opening, adjustable dies and such other features as tend to make them just right. Also manufacturers of Special Tools.

Write for Catalogue.

Williams Tool Co. ERIE, PA.

Union Computing Machine Company,

3 Union Square West, N. Y., U. S. A.
Cable Address: "Computico, N. Y."

Manufacturers of

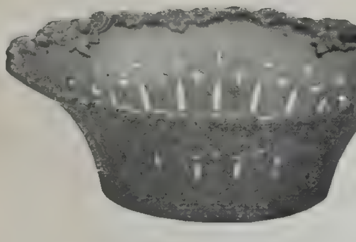
Union Cash Registers

Discounts on Application Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING CHECK AND STRIP PRINTING

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil.); 6.1 cu ft. (172 cu. met.). Order direct or through any reliable exporter.

L. A. LITTLEFIELD,



Bonbon. No. 452.

New Bedford, Mass., U.S.A.

Manufacturer and Exporter of

FINE

SILVER-PLATED WARE.

Orders filled through commission houses.
Correspondence solicited.
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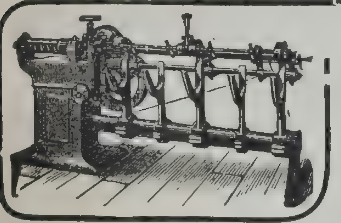


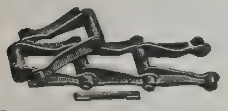
Our Wire Straightening and Cutting Machinery and Riveters

are the original and standard machines improved, and are guaranteed in every respect. Design and workmanship the best; quantity and quality of production unequaled.

SPECIAL AUTOMATIC MACHINERY. We have large and varied experience in designing and building special automatic machinery. All our construction is substantial, combining speed and simplicity, securing the minimum expense for operation and repairs.

We have innumerable drawings and patterns, some of which might be adapted to your needs.

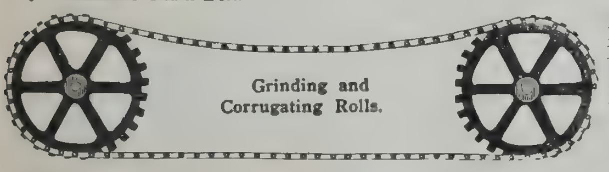
THE F. B. SHUSTER CO., Formerly John Adt & Son, **New Haven, Conn., U.S.A.**



Mey Detachable Chain Belt.

The Mey Chain Belting Engineering Works,

H. F. Mayer, Prop.,
14 Perry Street, Buffalo, N. Y., U. S. A.



Grinding and Corrugating Rolls.

Manufacturer of Patent Mey Chain, Link Chain, Sprockets, Elevator Buckets, and Conveying and Elevating Machinery.

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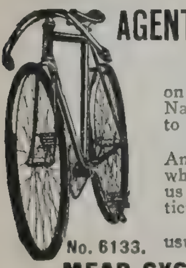

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AGENTS WANTED in every country to handle our lines of BICYCLES. 1905 Models, highest grade, complete and fully guaranteed.

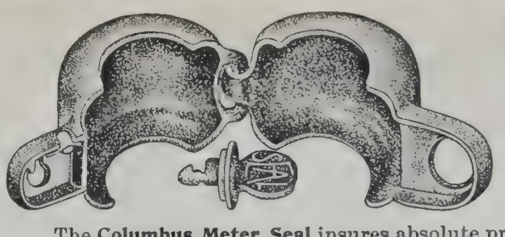
$11.75 (£2.8.0) to $24.00 (£4.18.4) NET.

We will ship sample Bicycles on approval to any part of the world on receipt of a deposit of **$5.00 (£1)** each, or send full price to First National Bank, Chicago, or a reliable Commission House, New York, to be paid us when wheels are shipped.

We guarantee these Bicycles equal to the best $30.00 and $40.00 American machines. We have numerous agents in foreign countries who have built up a large and profitable business in our cycles. Send us an order for a sample bicycle, or write for catalogues and full particulars concerning shipments to your country.

Tires, equipment, sundries and sporting goods of all kinds at half usual prices. Ask for free "Sundry Catalogue."

MEAD CYCLE CO., Dept. T 45, Chicago, U. S. A., and Liverpool, England.



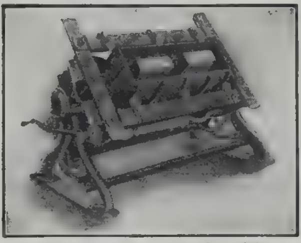
STOP THIEF!

NO MORE STOLEN GAS OR WATER.

The **Columbus Meter Seal** insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

COLUMBUS METER SEAL COMPANY,
COLUMBUS, OHIO, U. S. A.



Machine showing rocked position.

The WINGET CONCRETE MACHINE CO.

COLUMBUS, OHIO, U. S. A.,

MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

SEND FOR OUR NEW CATALOGUE.

In order to facilitate our increasing export business, we desire to establish an agency with one responsible firm in each trade centre of the world.

J. G. BLOUNT CO.,

EVERETT, MASS., U. S. A.

Manufacturers and Exporters of the

BLOUNT GRINDERS.

IMPROVED PATTERNS, NEW DESIGNS, MATERIAL AND WORKMANSHIP FIRST-CLASS.

Arbors ground and run in self-oiling bearings. 6-inch to 24-inch wheels.

Orders filled through commission houses. Correspondence solicited. Illustrated Catalogue "B" on application.

PAUL MFG. CO.

Manufacturers and Exporters of

CANDO Silver Polish

Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

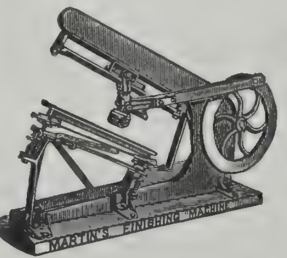
Orders Filled Through Commission Houses.
Correspondence Solicited. Circular C on Application.

BOSTON, MASS., U. S. A.

WILLIAM F. MARTIN,

MANUFACTURER AND EXPORTER OF

Martin's Jack for Finishers of Leather.



It leads all rivals. Compact, simple, easy and silent action. Quickly adjustable. Quantity and quality of work unequaled. High rate of speed.

Will set out, pebble, "stone out" and glass in black and paste. Using either oil or soap blacking entirely without hand labor.

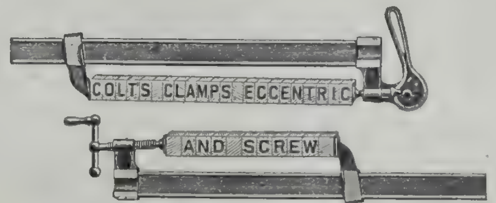
For morocco or lining finishers, the Martin Jack will glaze, roll, pebble and glass out superior to other machines. Agates, Glasses, etc., in stock.

Orders filled through commission houses. Write for Circular "M." Address

WILLIAM F. MARTIN, Salem, Mass., U. S. A.

Colt's Eccentric and Screw Steel Bar Clamps.

Quick Acting.
Time Saving.



Orders filled through commission houses

Catalogues free on application.

MANUFACTURED BY THE

Batavia Clamp Co., 35 Center St., Batavia, N.Y., U.S.A.

The VAN BIBBER ROLLER CO.

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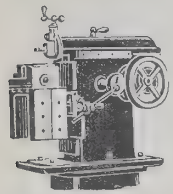

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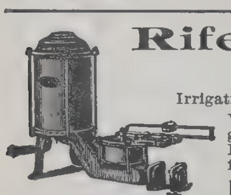

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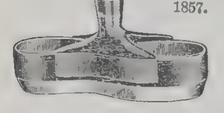

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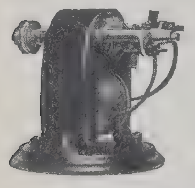

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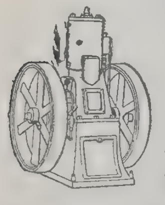

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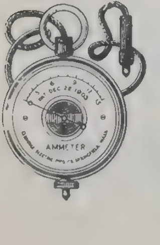

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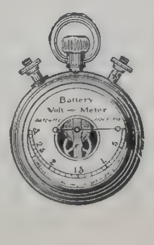

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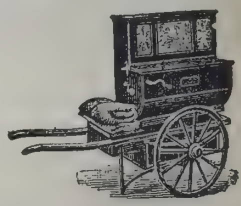

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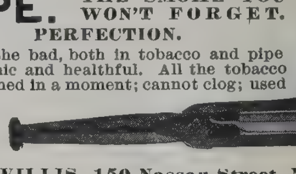

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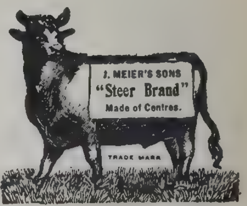

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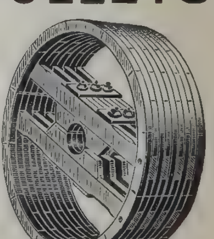

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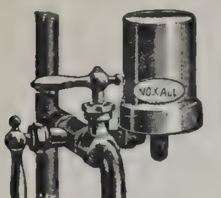

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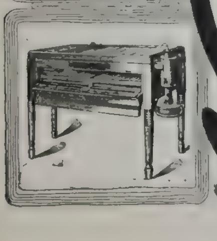

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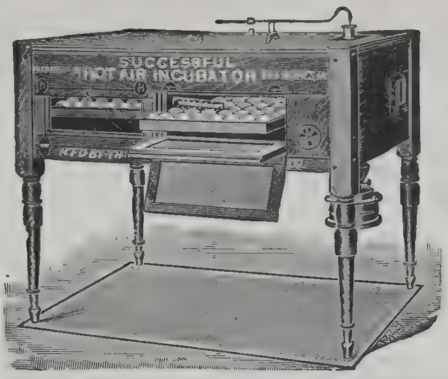

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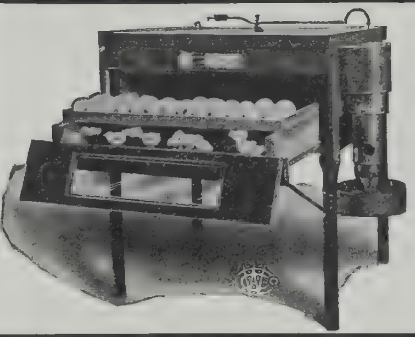

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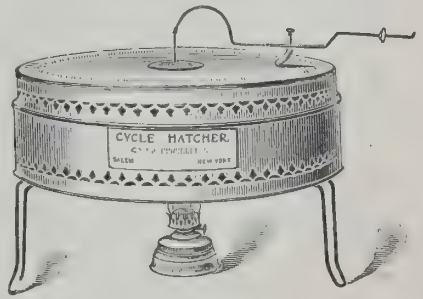

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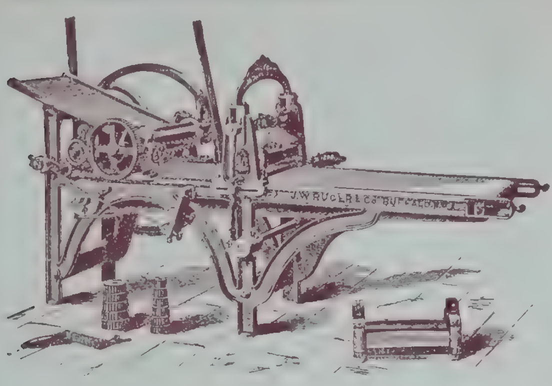
HAND-POWER BISCUIT MACHINE.


OUR NEW LITTLE GIANT.

Has patent connecting rod, adjustable cutter arm, is heavily geared and has the improved positive-feed motion.

Length, 9 feet; width, 3 feet 3 inches; rollers, 16¾ inches wide, 4 inches in diameter; speed, 60 revolutions per minute; weight, 1,375 lbs.

PRICE, WITH SODA CUTTER, $325.00.

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THE HORSE=POWER SPRAMOTOR.

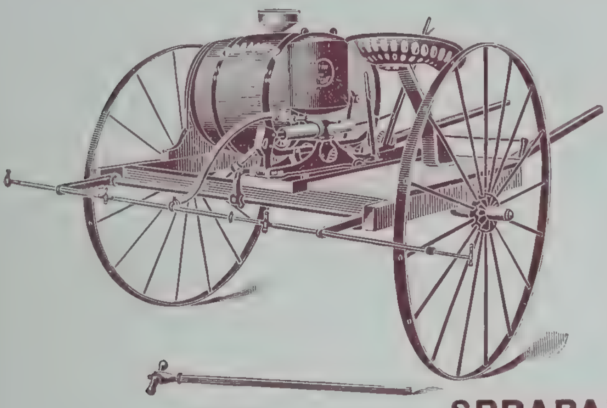
FIG. 62.

Horse-Power Spramotor sprays potatoes from above and below at the same time. Can be worked by hand for stationary work if desired. Capacity, 12 nozzles at work. Prices on application.

WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR.

The Spramotor has been adopted by the Russian, Canadian, Belgian and New Zealand Governments, as well as in the Experimental Stations of Ontario, Manitoba, Quebec, Nova Scotia, British Columbia and many of the States within the United States of America.

NOTE.—The prices quoted, U. S. gold or its equivalent, are for **Export only**, include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

The Fig. 63 Horse-Power Spramotor is intended for the spraying of fruit trees for insects and scab; potatoes to prevent blight and insects; vineyards; the destruction of weeds and for the painting and whitewashing of buildings. Has automatic agitator, hardwood frame and is a first-class equipment throughout. Price, complete, boxed, weight, packed, 560 lbs., f. o. b. New York, **$75.00.**

Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65¼ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete, **$15.00.**

Spramotor No. 1, price per dozen..............................$166.32

These machines will apply any kind of COLD WATER or OIL PAINT.

SPRAPAINT, a Paint in DRY-POWDER FORM, only requiring the addition of cold water for instant use. Specify "Spramotor" and "Sprapaint" when ordering.
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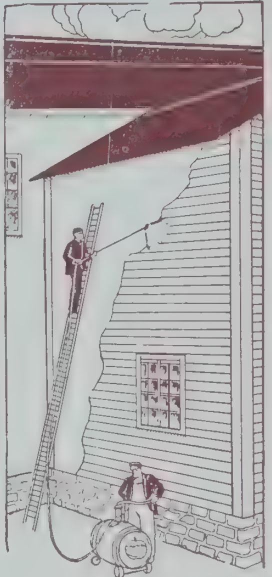
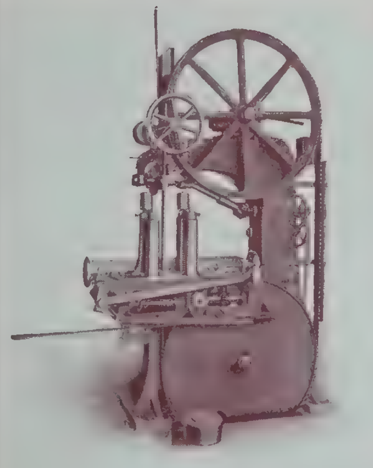
For EXTERIOR " " " " " " " " 95.00.



THE SPRAMOTOR CO., Manufacturers, - London, Canada.

Cable Address: "Spramotor," London, Canada. Codes: Directory, A B C 4th, and Western Union.


(AS A RIP-SAW.)

New Invention—Two Machines in One.

This tool is designed for those who do both ripping and re-sawing, but not enough of each to require separate machines running all the time. It does the work as well in every way as the single machines, but takes half the room, and costs much less.

If you have this work to do, and want it done with economy and efficiency, we cannot recommend this machine too highly, and want you to send us a postal for particulars.

No. 146 COMBINED BAND RIP AND RE-SAW.

(Patented Feb. 27, 1900; Oct. 2, 1900; March 10, 1903.)

We present herewith our latest triumph in wood-working machinery. It is absolutely the most perfect tool of this character ever built. Here are **just a few points:**

1. Table is divided, the half carrying re-saw rolls turns down, and is locked instantly, and **by one man.**
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3. Has all the features that make the single tools so successful.
4. Re-saw rolls, self-center.
5. Solid lower wheel, increasing speed, lessening the circulation of dust, and preventing overrunning.
6. Patent straining device, with knife-edge balance on saw blade.
7. Table tilts 15 degrees for angle sawing.
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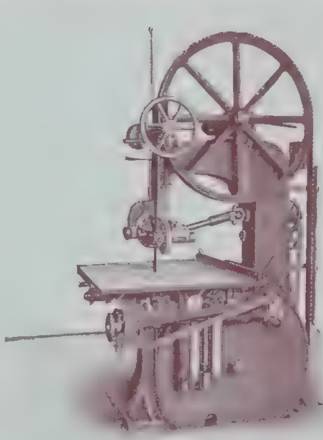
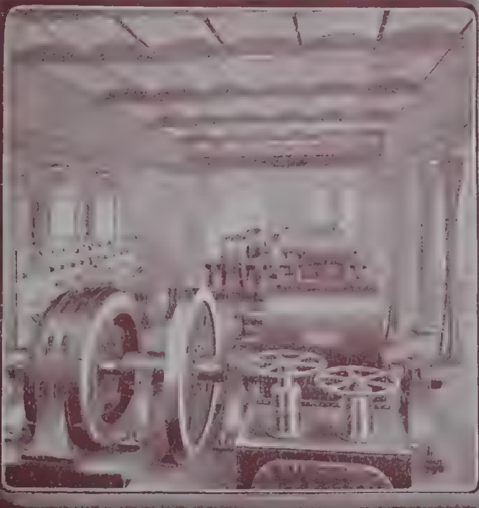

(AS A RE-SAW.)



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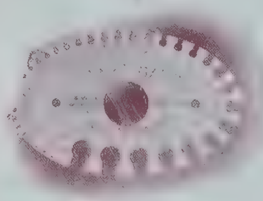

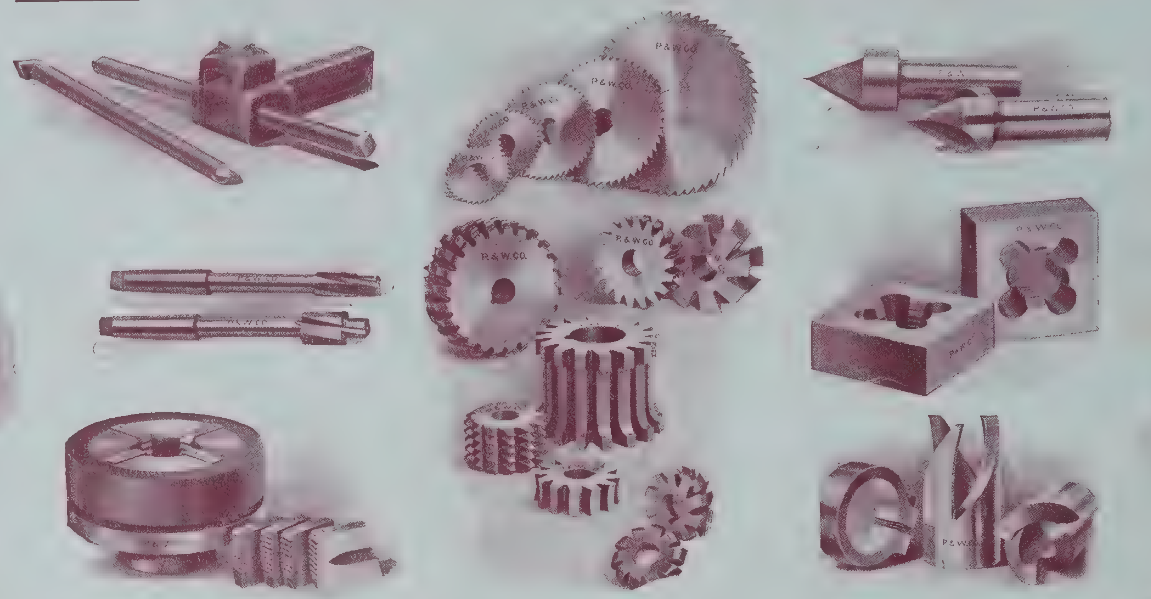

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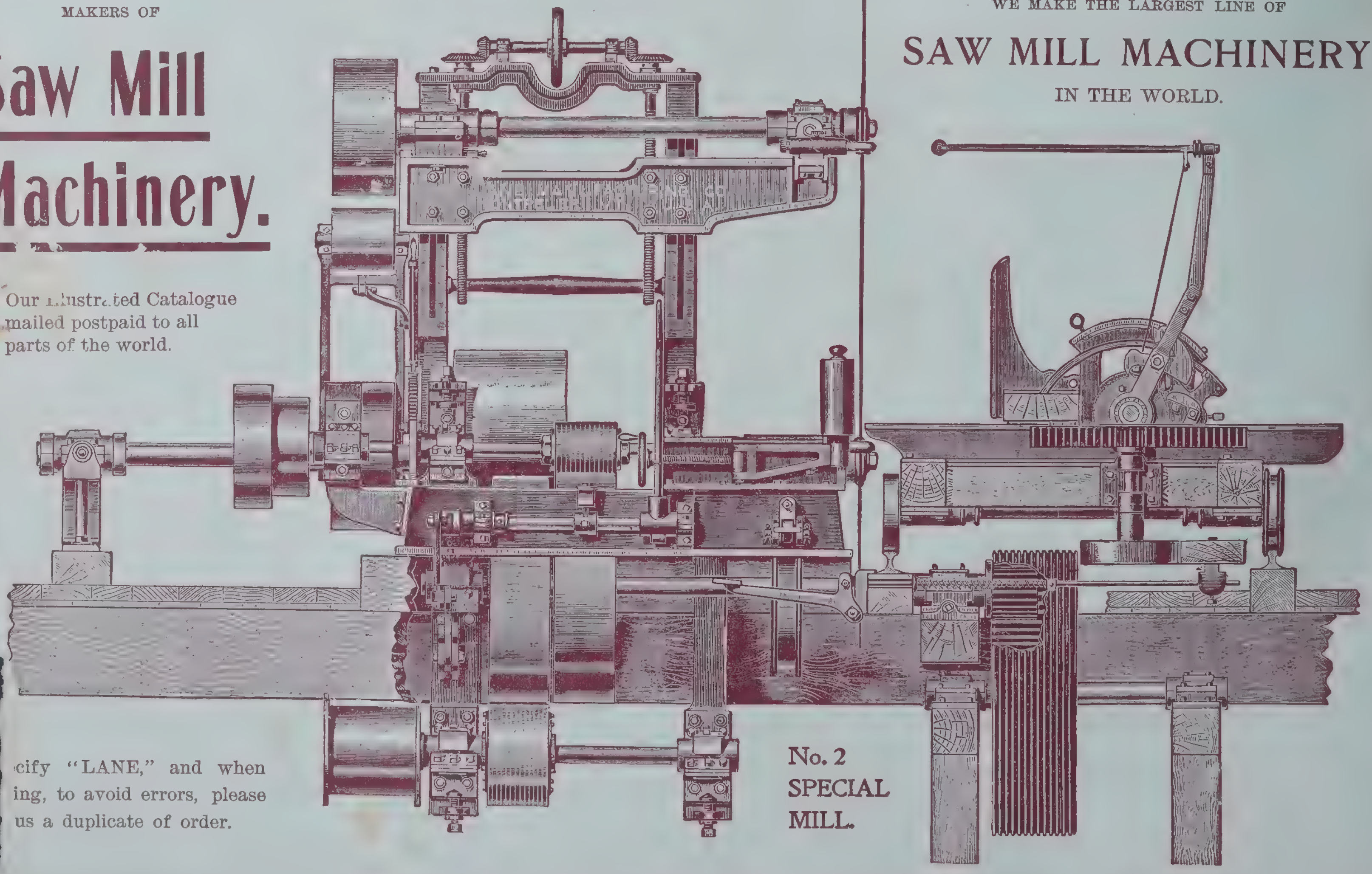
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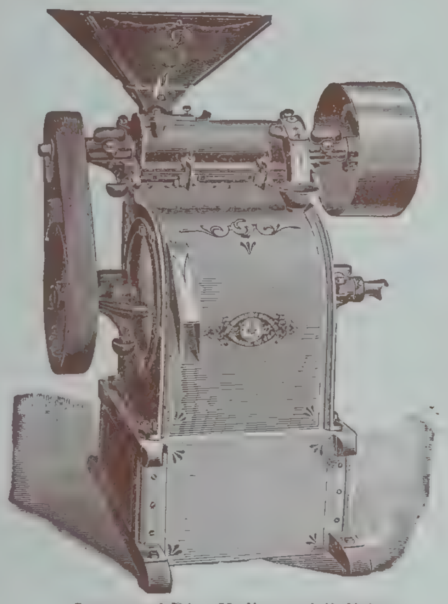
Rice and Coffee Hulling Machinery



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Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

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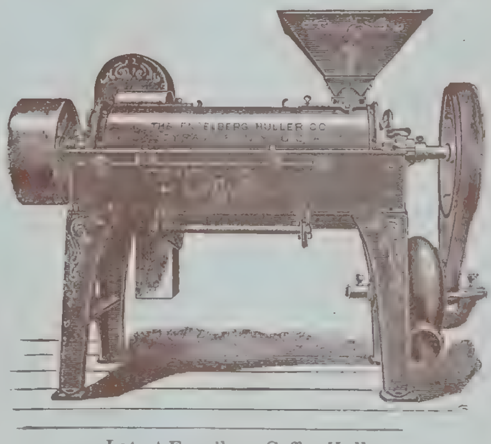
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Latest Engelberg Coffee Huller.

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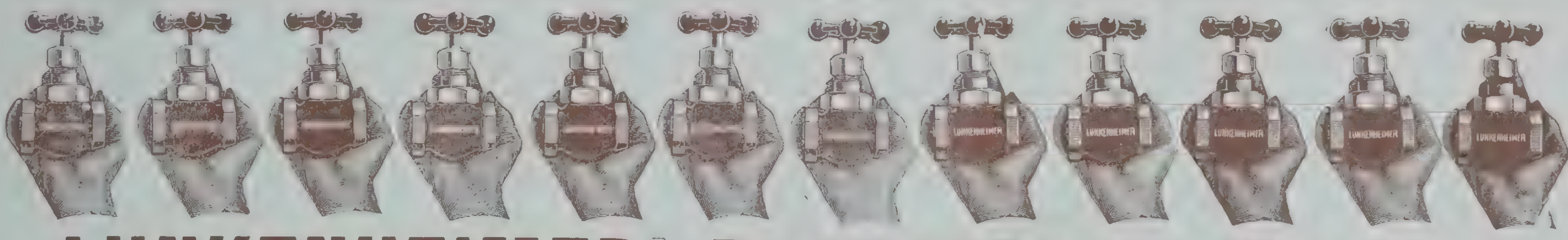
THE ENGELBERG HULLER COMPANY, P. O. Box B, Syracuse, N. Y., U. S. A.

Export Office: 333 Produce Exchange, New York City.



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In screw and flange ends, for 200 and 350 pounds working pressure, from one-eighth inch up.

A trial order demonstrates their peculiar fitness and invariably results in their adoption. These valves are extensively used and in continuous service in the United States Navy, Locomotives, Lake and River Boats, High-Pressure Power Plants, Etc. All valves rigidly inspected and tested before shipment.

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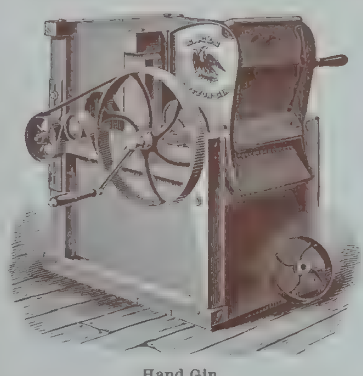

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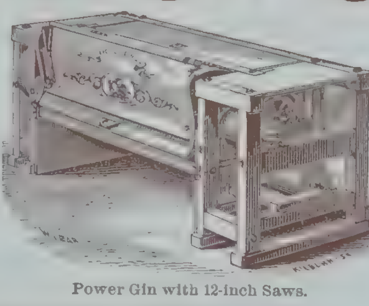

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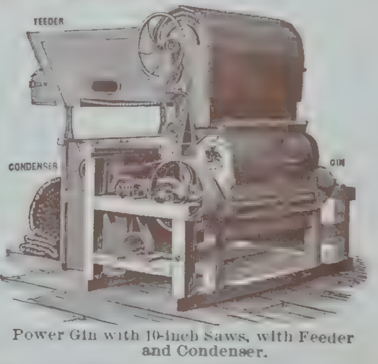

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In this lantern the globe and perforated plate tilt back out of the way so that free access can be had to the burner to light, trim or extinguish.

It is, without exception, the most convenient arrangement for this purpose on any lantern on the market.

This lantern has heavy tinned steel oil pot, the non-leaking kind, and can be depended on for long service.

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All Dietz Lanterns are absolutely safe from taking fire or exploding.

The "O. K." Lantern gives a strong, steady, copious light, and has ⅝-inch burner and No. 0 globe.

They are packed one dozen in a case, measuring three cubic feet.

List Price, $9.50 per dozen.

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THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of timepieces. The output is five thousand watches per day, which go to all parts of the world.

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F. O. B. New York.

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Coffee Mills.

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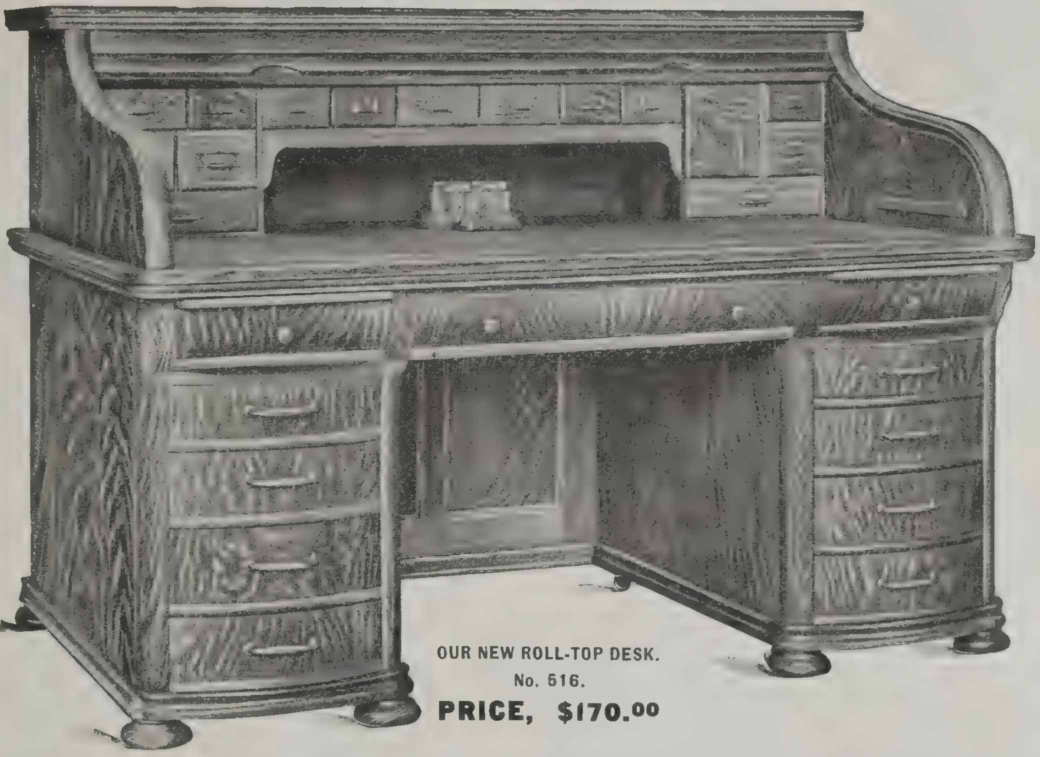

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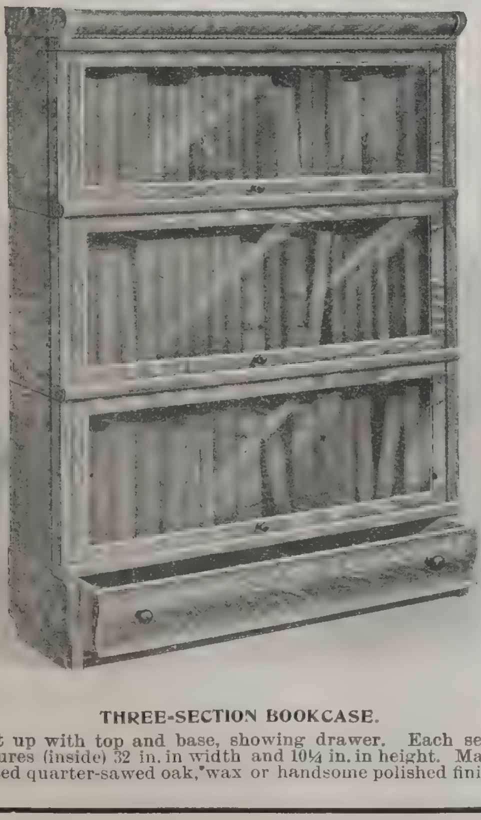

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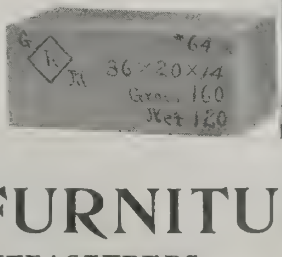

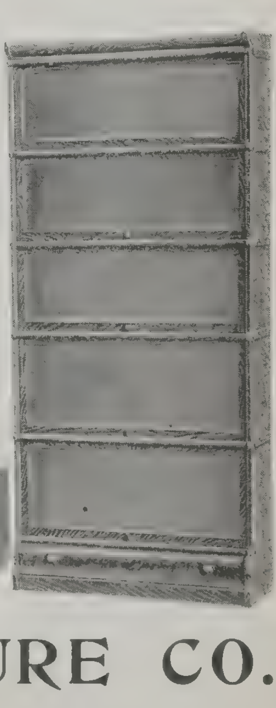

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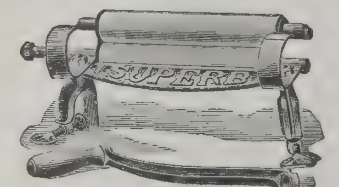

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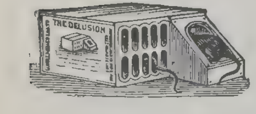

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Requires no setting.

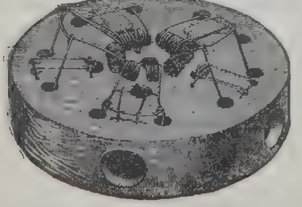
Rex Trap.

Made in two sizes: large size for rats; small size for mice.

Erie Rat Trap.

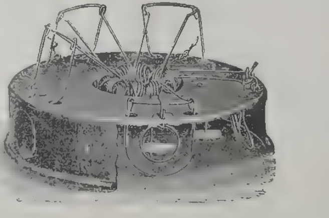
Best Trap on Earth.

RAT TRAPS.—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch."
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker" "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish.



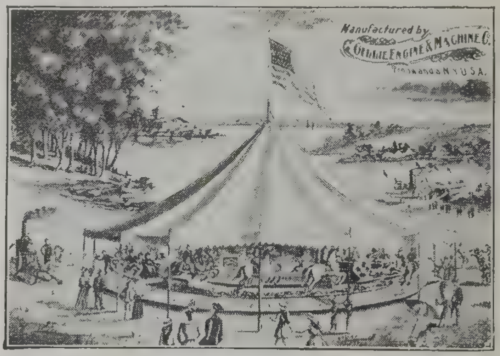
Lovell's Easy-Setting Metallic Mouse Trap

$600.00 in a day; $6,000.00 in a month; $20,000.00 in a season
is the report of an owner of one of our

CARROUSELS OR MERRY-GO-ROUNDS.

Suitable for County Fairs, Parks, Plazas, Pleasure Grounds, or any Public Place where young or old congregate.

Pays a larger dividend upon the amount invested than does any other known device made for the pleasure-loving public.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Full particulars, including weight, dimensions and cube, cheerfully given. Prices quoted f. o. b. steamer at N. Y. City. Our illustrated circulars, English or Spanish, mailed postpaid to any part of the world.

GILLIE ENGINE AND MACHINE CO.

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TONAWANDA, - - - - NEW YORK, U. S. A.
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"FOR THOSE WHO WANT THE BEST."

Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:

Upon receipt of **$40.00** in U. S. gold or its equivalent, we will box and deliver f. o. b. cars at New York. five gross of these shades in assorted sizes.

APPLIED DEVICE COMPANY, Springfield, Mass., U. S. A.

CHEAP PRINTING.

Hand presses, easy to use by man or boy. Typesetting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **$40.00.**

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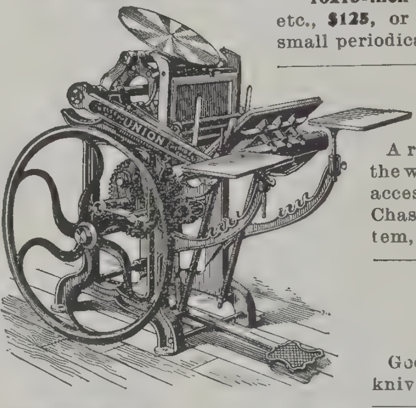

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A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **$400**, outfit included.

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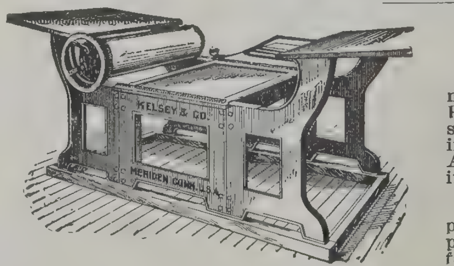
Good hand machine with 24-inch steel knives, **$12.00.**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MERIDEN CONN. U.S.A.

Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches, Price, **$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

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MAKERS OF FINE MACHINISTS' TOOLS.

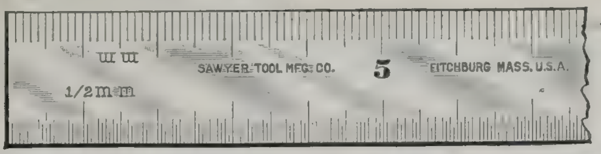
Improved Try Square
With hardened blade. Furnished in ENGLISH, METRIC and ENGLISH and METRIC graduations.

WE SEND THIS WARRANT WITH ALL PRECISION TOOLS.

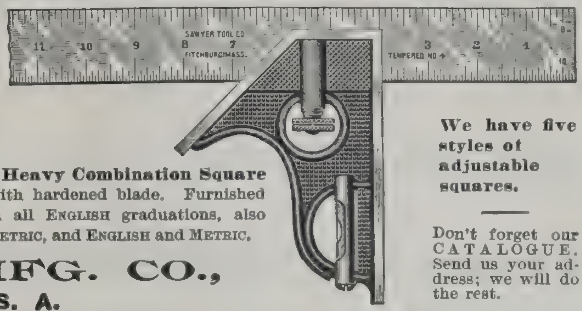
OUR GUARANTEE.

We warrant this tool to be accurate. Any tool made by us found to be defective will be cheerfully replaced upon receipt of the same at our factory.

SAWYER TOOL MFG. CO.,
Fitchburg, Mass., U. S. A.



Spring Tempered Metric Rules.—These rules are of standard widths and thicknesses; graduated in millimeters and half millimeters, or when desired will be furnished in English and Metric graduations. All lengths in stock.

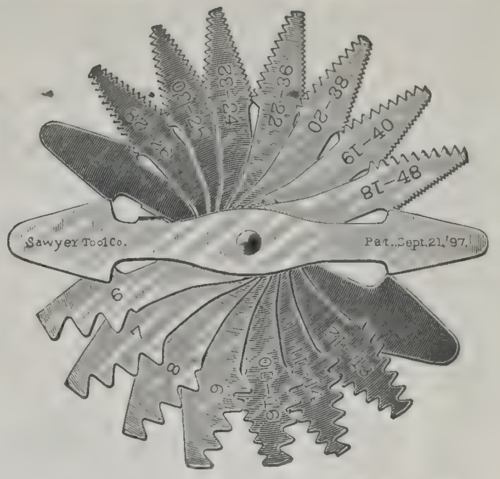


Heavy Combination Square with hardened blade. Furnished in all ENGLISH graduations, also METRIC, and ENGLISH and METRIC.

We have five styles of adjustable squares.

Don't forget our CATALOGUE. Send us your address; we will do the rest.

Our fifty-four-page CATALOGUE, illustrating and describing the various styles and sizes of Fine Machinists' Tools made by us, mailed postpaid.



Patent Screw Pitch Gauge—Whitworth Thread.

This gauge has the blades pivoted in the middle with the pitches cut on the tapered edges of either end.

The shape of the blades of this gauge is such that they can be used in very small holes. It is compact and has the following pitches; 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 38, 40, 48.

SAWYER TOOL MFG. CO.,
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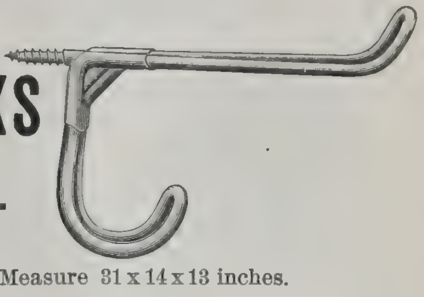
SHELF BRACKETS and COAT AND HAT HOOKS



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SAMPLE ASSORTMENT OF BRACKETS COSTS ABOUT $15.00.

Weigh about 200 pounds. Measure 42 x 23 x 18 inches.

HOOKS, No. 15, JAPANNED, 12 gross in case. Weigh about 130 pounds. Measure 31 x 14 x 13 inches.

Order a "sample assortment" of Brackets and a case of Hooks.

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The ZEBUAZO Whip. It stands, swings and wears like WHALEBONE.

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Illustrated Catalogue Furnished on Application.

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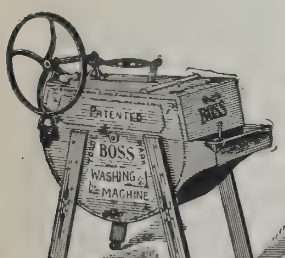

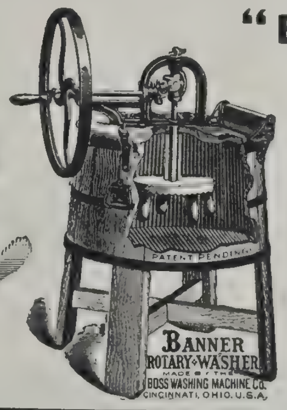

"BOSS" Line of Clothes Washing Machines

Will cleanse any fabric quick and without the slightest injury. These machines are a

NECESSITY WHEREVER CLEAN CLOTHES ARE DESIRED.

It will pay you to secure our catalogue and price-list before placing your order elsewhere.

MANUFACTURED BY

BOSS WASHING MACHINE CO.

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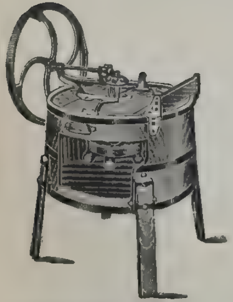
Largest Manufacturers in the World of Clothes Washers.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."



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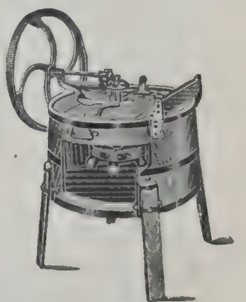
THE Guarantee
FOUR-STROKE ROTARY
Washing Machine



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Just placed upon the foreign and home markets, combines the **Latest Improvements** in **High-Speed, Ball-Bearing Washing Machines** and will accomplish all that is claimed for or required of any washing machine **and more.**

NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order FOUR NOW. Later you will order in large quantities.

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Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.
NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

The Improved United States Cream Separator

is a machine that separates milk from cream as soon as the milk is taken from the cow, and it holds the **World's Record** for performing this separation most thoroughly.

The foreign demand for this machine is rapidly increasing, not only because of its superlative merit, but also because it is widely advertised in countries such as New Zealand, Australia and South Africa, where dairying is rapidly developing. It is the most popular machine for the export trade, because of its very strong and simple construction, to which is due its extreme durability—a most necessary quality for the foreign trade.

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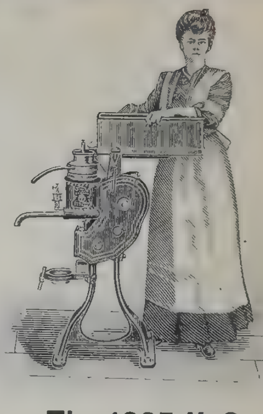

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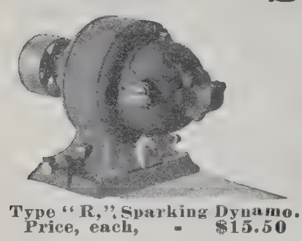

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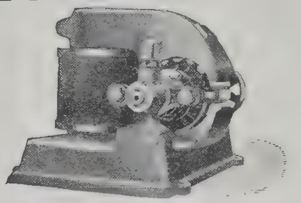
Price, each, - $15.50



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Price, each, - $26.50

The prices here quoted are packed, ready for shipment abroad, and delivered f. o. b. New York, Boston or Philadelphia.

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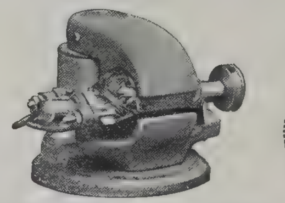
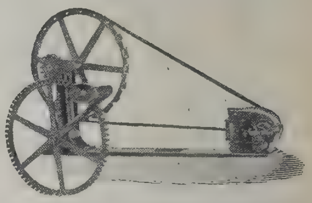


"Midget" Dynamo or Motor.
Price, 6, - - $18.00



"Midget" Dynamo or Motor, with hand power.
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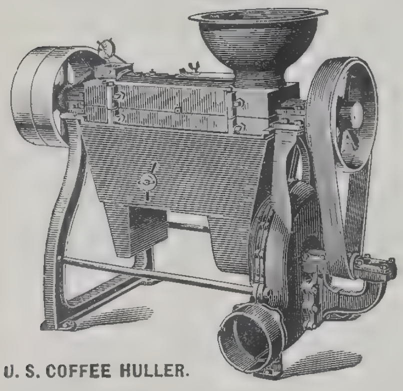
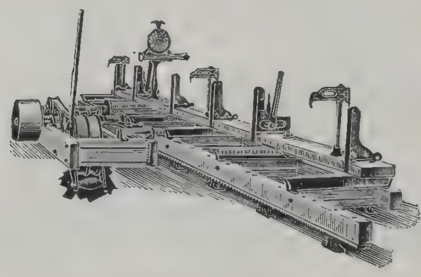
THE ELBRIDGE ELECTRICAL MFG. CO., Elbridge, New York, U. S. A.



U. S. COFFEE HULLER.



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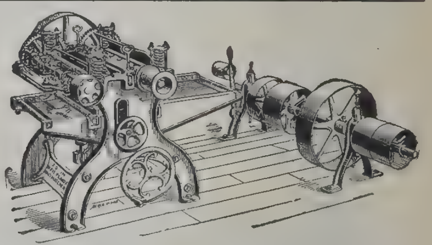

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For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

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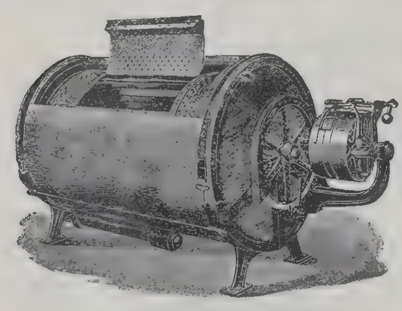

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COMPLETE OUTFITS for Steam Laundries, either custom or new work, also for Laundries in Hospitals, Institutions and Hotels.

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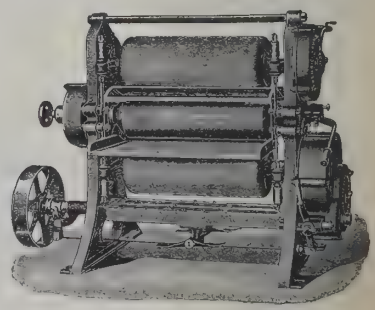
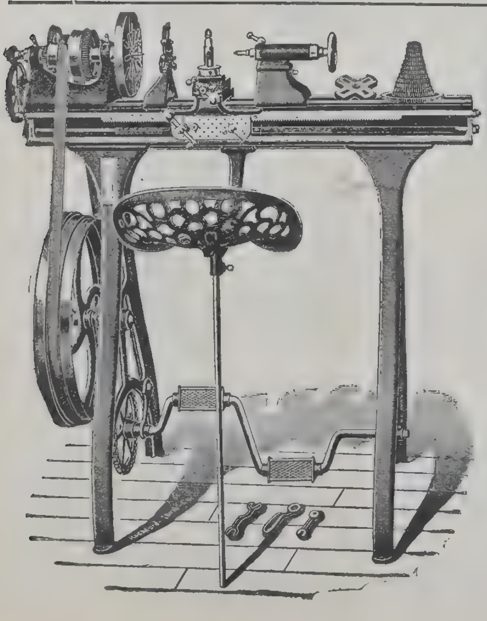


Collar and Cuff Ironer.



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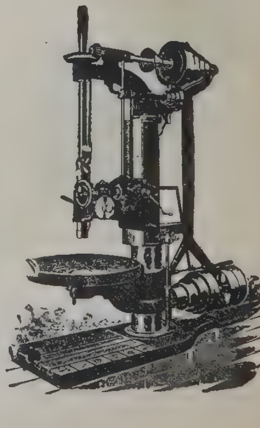

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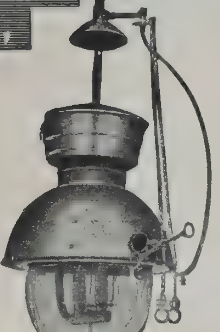
KEROS INCANDESCENT OIL LAMPS

give the most economical light in the world. Burn 90 per cent. of air to 10 per cent. of oil. Air costs nothing.

One Gallon of Kerosene Oil Gives a 2,000-Candle-Power Light for Twelve Hours.

PERFECTLY SAFE.

Lamps for Lighting Streets, Stores, Parks, Wharves, Mines, Plantations and Private Houses.



No. 190x. Outside Lamp; outfit with tank; 2,000 candle-power; 30 inches.

No. 501. Bracket Lamp; outfit with tank; 1,000 candle-power; 15 inches.

See June, 1904, number of this Journal for illustrations of various styles. Illustrated catalogues free on application.

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SHOW CASE No. 31 is **Our Leader for Foreign Markets,** and is just the thing for displaying **Furnishing Goods, Chemists' Sundries, Dry Goods**; in fact, is well adapted for the **display of any line of goods.**

SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

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IRVING'S NEW WIZARD OR "GY-ROTARY" TOP.

Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high-speed machine, made of **STEEL,** nickel-plated; **capable of 20,000 revolutions per minute,** and can be put in motion by a child in three seconds. Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

FOR EXPORT ONLY——$9.00.

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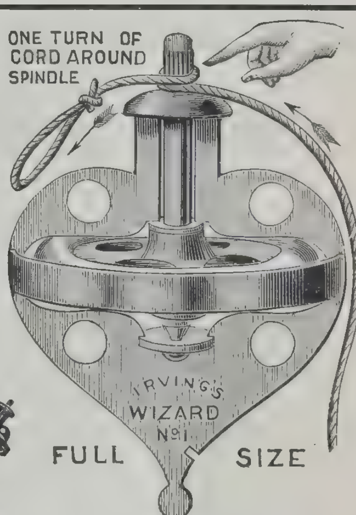
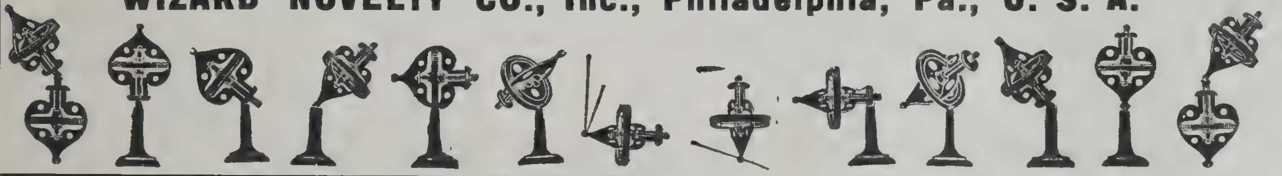


ONE TURN OF CORD AROUND SPINDLE
IRVING'S WIZARD No 1
FULL
SIZE



Patent Applied for July 19, 1904.

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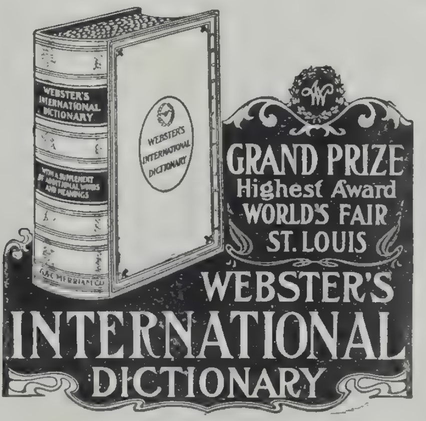
Agents wanted. Send for New Catalogue. Cable Address: "Fletcher, Cleveland."



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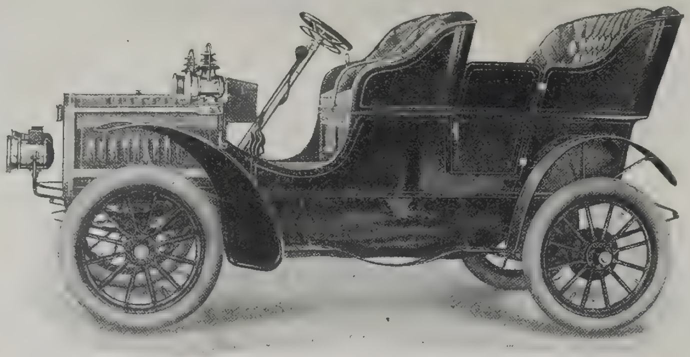

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16-18 horse-power. $1,350.

Packing and freight to New York, $62.50; to San Francisco, $167.50. Other models, $750, $850, $2,000 and $3,000.

This vehicle can carry you over country roads as fast as you wish to go. Besides all needed power, it has exceptional road clearance and other provision for reliability and ease of control.

The working parts are readily accessible, and so simple that adjustments can be made without the help of a mechanic and without crawling under the machine.

To reliability and ease of operation is added the comfort made possible by big, luxuriously upholstered seats and the almost complete elimination of vibration by the long wheel base, full elliptic springs, large tires, rigid bracing of the engine and the balancing of all reciprocating parts.

Every part except the body, tires and induction coils is made in our own factory. The savings effected explain the low price.

When delivered the machine is equipped with brass side, tail and two gas headlights with separate generator, brass horn, drop-forged wrenches, oilers, pump and repair kit.

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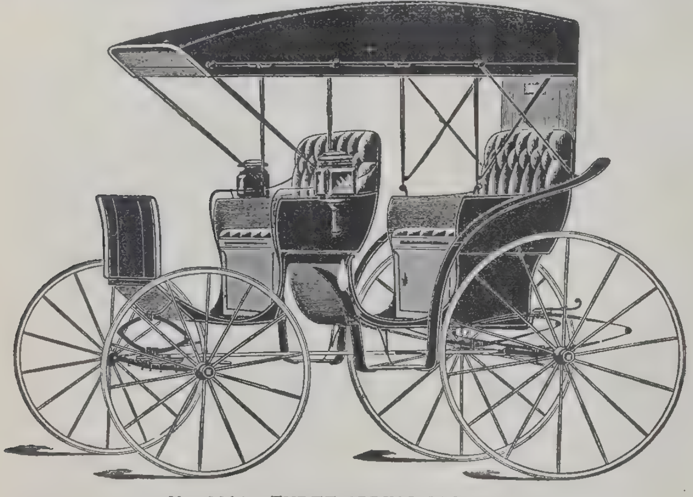

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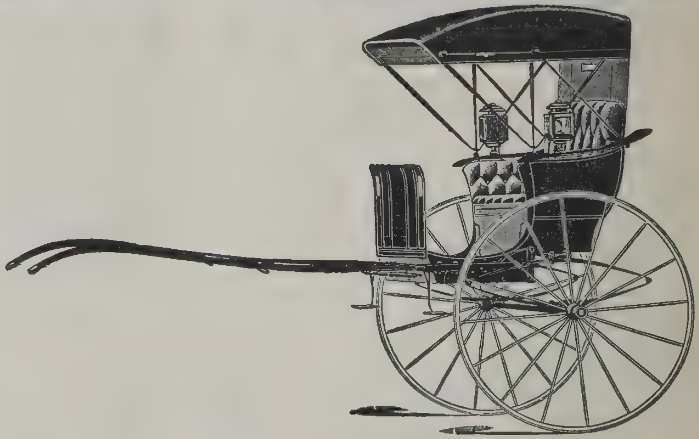

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EFFECT OF COMPETITION FROM THE UNITED STATES IN THE MARKETS OF THE WORLD.

NOTWITHSTANDING the asperities caused by active competition in the world's market of manufactured articles or the sometimes jealous rivalries among manufacturers to which it gives birth, it is a helpful force, deserving rather of fostering care than the execration frequently heaped upon it. Human progress is the direct result of the unrest born of competition between vast nations as well as individuals, and it is directly owing to this progress that American methods, American manufactures, American machinery and American products have taken such an enviable place in the markets of the world.

Contentment is an excellent thing in its way, but the thinking tiller of the soil, be he in Australia, along the banks of the Congo or under the skies of Southern Europe, wants the best that can be produced in farm machinery. Not an intelligent workman labors at a lathe, evolving additional machinery, but insists upon having the most excellent tools for his special purpose. It is at this stage that the farmer and the mechanic reach toward the cunningly constructed products of the vast workshops in the United States and obtain better and more fitting implements for their special tasks than can be produced in any other place in the world.

There is in every man an inherent laziness. In some men, pride and a determination to excel their fellows keep the spirit of laziness dormant and conceal it from view. That is to say, competition steps in and triumphs over indolence. Competition is not merely a desire upon the part of one nation or individual for more wealth than is possessed by another; it is that subtle force which impels one to do something more and better than anything achieved by predecessor or contemporary. A Watt invented the steam engine, but it was a Fulton who applied the principle to navigation on water, and a steamboat moved majestically upon the surface of a great river. With a kite, Franklin drew electricity from the clouds, inspiring the inventions of Morse and Edison, and these inventions have brought the remotest corners of the earth into neighborly communication.

Similar instances to the above can be found in every department of human endeavor and they invariably point to competition's potent and wholesome influence. The achievement of Americans in every industry under the sun is felt all over the wide world. Where railroads bring distant points more closely together, where electric light turns night into a semblance of day, aye, wherever a propeller turns and pushes a great steamship through the waters of the seven seas, there American progress is marked.

It is the keen competition of the manufacturers of the United States with those of the older countries that is largely responsible for the conditions that exist to-day. It has carried us along in the march of progress. Competition furnishes antagonists and "our antagonist is our helper." Let us then cherish for our competitor the kindliest sentiments. May his tribe increase—within reasonable limits.

In the interests of the manufacturers of this country, whose products go abroad in competition with those of other nations, the new Bureau of Manufactures of the Department of Commerce and Labor of the United States expects and believes that it may accomplish something really useful. The avowed object of the bureau is "to foster, promote and develop the various manufacturing industries of the United States, both at home and abroad," and in the latter sphere, will doubtless receive the hearty support of all loyal Americans who desire foreign trade. Relative to this phase of the question, the chief of the bureau says: "I am convinced that the foreign field is a most promising one for the labors of this bureau. I feel that it can be helpful in many ways. Special attention will be given to South America and Africa. The American manufacturers are eager for information relating to new markets, and this bureau will undertake to supply it. The bureau can also be serviceable in cultivating markets we already have. If there should be a decline in exports to some country, the bureau might undertake to ascertain the cause and perhaps suggest a remedy." The work of the bureau will doubtless extend to Australia and all the British colonies, where American achievement in manufactured articles is already widely known and appreciated.

UNIVERSAL POSTAGE STAMPS.

WHILE the meeting of the Universal Postal Congress, originally scheduled to take place in Rome beginning April 21st of the present year, has been indefinitely postponed on the initiative of the Italian Government, the purposes of the delayed assembly will be in nowise impaired by lapse of time. It is designed that the Universal Postal Congress, when it assembles, shall devise means of still further increasing the usefulness of the existing Universal Postal Union, of which all civilized nations are present members, and which has already demonstrated the economic, religious and educational value of cheap, prompt, safe postal exchanges among progressive races. The Anglo-Saxon nations are specially interested in this movement. The English-speaking people were the first to appreciate the importance of the post-office as a branch of public service. They were the first to realize that a postal system enabling all citizens to communicate with one another promptly and at a minimum of cost would certainly promote that broad community of interest upon which the unity and loyalty of nations depend. In short, the postal service, being essentially an educational agency in that it affords the cheapest, freest and safest means of communication among the people of a nation, has naturally reached its highest development in those countries where intelligence is most widely diffused, where liberty is broadest and where the individual citizen enjoys the largest degree of political independence.

This means, of course, that the United States of America, on one side of the Atlantic, and England on the other, have been foremost in developing a world-wide postal service. It is due to their leadership that we have to-day in the Universal Postal Union a mail service which insures the reasonably expeditious delivery of mailable parcels—letters, printed matter and merchandise—in any part of the world where post offices exist—and this service is efficient, safe and economical. The Anglo-Saxon nations have extended this service by establishing a system of international money orders whereby moderate sums may be transferred from one country to another by individuals with absolute security against loss and at a minimum of cost. They have provided a registry system for the transmission of valuable parcels which affords increased safety for packages in transit, and they have developed a reciprocal arrangement under which misdirected, unaddressed or unclaimed letters or parcels are ultimately returned to the senders. These wise provisions are gradually being extended to the entire system of the Universal Postal Union, and when its reach is complete the efficiency of that service will be enormously greater.

But even then there will be room for a still greater improvement.

At present every country belonging to the Universal Postal Union zealously insists upon cash in advance for the service it renders under the union—that is, it requires that its own postage stamp shall appear upon every piece of mail matter destined to a foreign country. Broadly speaking, there can be no objection to that. It is simply a matter of business. Yet if there were a universal stamp, issued under international stipulations and good for all postal purposes in all countries belonging to the Universal Postal Union, it is clear that international correspondence, which the whole organization is designed to benefit, would be greatly simplified and cheapened. It has been proposed that each nation belonging to the union shall issue international reply envelopes at, say, 10 cents each, having one 5-cent stamp or its equivalent embossed on the right-hand upper-corner and a similar stamp on the left-hand upper-corner. At the office of destination the stamp on the left-hand corner would be good for the purchase of a reply-stamp of equal value at any post office in the country to which the original inclosure was sent, and the stamps thus redeemed would ultimately be forwarded to the countries issuing them for audit and settlement in international balances. This, of course, is only a tentative proposition, but it is sufficiently practical in its operative features to show that the problem of an international postage stamp, conforming to the legitimate requirements of the Universal Postal Union, is by no means impossible of solution.

THE TELEPHONE IN WAR.

FOR the commander-in-chief of an army to keep in constant touch with his division commanders, even on the field of battle, is a phase of war that could only be made possible through the fertile brain of George Graham Bell, the American inventor to whom the world owes the telephone. No doubt exists now among students of the art of war that the telephone has taken the place of the courier. It does the work more rapidly, more surely and better. With a less effective instrument at his command, it would have been a physical impossibility for Field Marshal Oyama to direct the operations of 400,000 men and to have timed his strokes so exactly, had he been forced to depend upon orders carried by a courier on horseback.

The telephone reduced the armies of the Mikado to one vast machine that was manipulated by the hand of a master. Nothing was left to chance; every stroke was correctly timed and the marshal at headquarters was almost instantaneously informed of results. The child of George Graham Bell's brain was equally effective in both offensive and defensive work. As soon as any point was threatened, this was also transmitted to headquarters and flying columns of reserves were sent to relieve the strain. The whole plan of battle, in fact, the entire campaign, has been directed by means of the telephone. As each advance was made, or a trench dug, connections were made with headquarters by telephone and fighting was directed from the latter point by the same means.

The invention that Mr. Bell intended primarily as a means of bringing the world closer together, and which the clever native of the "Land of Flowers" is using so ingeniously, is still incomplete and Mr. Edison is now making improvements that, it is said, will render it still more effective.

THE JAPAN OF THE FUTURE.

JUST what Japan will do and the position she will occupy in the commercial world after the hostilities in the Orient have ended is the topic of speculation throughout the world. The conclusion that the end of hostilities is not far in the future is a reasonable one, and it is but reasonable to suppose that the nation that has become great in half a century and is now one of the world's great powers, will not remain idle.

One of the commonest predictions of diplomats is that she will inaugurate a commercial war, the aim of which will be to open up the avenues of trade. Japan is described as a country that is deficient in the raw materials necessary to increase her manufactures. Her tillable land area is limited, possibly not exceeding that of our State of California and with much less variety and value of resources. The conclusion is therefore reached, that Japan must import raw materials for her manufactures and food for her people.

This statement is indeed most reasonable. In her wars with China and Russia the "island Empire" has conducted itself as a nation having some definite object in view. Japan has an enormous population for which varied outlets into the rest of the world must be found. As a matter of fact, there are too many people to support at home and the same conditions will continue to exist unless she acquires greater territory. The territory that has been acquired by Japan, or which that nation may acquire as the result of a victory over Russian arms, will assuredly not be sufficient to meet her needs.

Japan has been the first of the Oriental countries to learn Western ways. That country comprehends the necessity to Great Britain of its dependencies. Will Japan be content with Manchuria? It is not impossible that she may turn a covetous eye in the direction of the Philippine Islands, with a view to buying them, and kindly taking from our shoulders the complicated work of "benevolent assimilation." That matter, though, is too far in the future to get excited about.

The power of Japan is well calculated to dissipate any impression that she will be easy to settle with after the war with Russia is ended. Our skirmish with Spain is not to be thought of with the sanguinary performance of the Japanese. He will have a great reputation to sustain and may be compelled to go further to maintain what he has gained in this war.

SANTO DOMINGO.

INASMUCH as an animated controversy has arisen in the United States as to what the American Government should do with regard to the fiscal affairs of the West Indian republic of Santo Domingo, THE AMERICAN EXPORTER feels in duty bound to present an impartial statement of the American program respecting that unhappy country. We do this partly for the reason that of the entire national debt of Santo Domingo, $32,000,000 in all, more than $27,000,000 is due to subjects of foreign governments, and partly because it is in order to offer a further word as to the policy of the United States in relation to the financial and commercial obligations of American republics.

Santo Domingo, with a population of perhaps 1,000,000, and with natural resources unsurpassed by those of any similar area of territory on the face of the earth, is, nevertheless, under present conditions, the most hopeless, helpless, miserable and uninviting country in the world. It has been plundered by foreign adventurers and looted by native outlaws. Its inhabitants are ignorant, indolent, superstitious and indifferent to their own condition. They have helped to place a leader at the head of the government only to join a little while later in a revolution to overthrow him and put in his place one still more corrupt and cruel. A republic in theory, the government is in reality a despotism of the meanest sort, the history of which is stained with intrigue, robbery and assassination. One ruler after another has bartered away the natural resources of the country, granting enormously valuable concessions for a song, appropriating the public revenues to his own use and imposing almost unbearable tax burdens upon the impoverished natives. When native resources failed to yield what the looters required loans were negotiated abroad, secured by grants and concessions, and in this and other ways the country has contracted a public debt of some $32,000,000. It is estimated that less than a third of the loans represented by that debt was ever received by a legitimate government or used for the benefit of the people.

In default of payment on some of its foreign indebtedness the Dominican Government was recently pressed by creditors. This pressure, which the government had no means to relieve, gave rise to another revolutionary movement, the idea back of it all being that no change could be for the worse. In sheer desperation, the Dominican Government urgently requested the United States to assume control of the fiscal affairs of Santo Domingo, take charge of the custom houses of the country and apportion the revenues there collected among the creditors of the country on an equitable basis. The President of the United States negotiated an agreement with that end in view, the stipulation being that 45 per cent. of the custom house receipts should be turned over to the Dominican authorities for domestic expenses and that the remaining 55 per cent. should be distributed on a pro-rata basis among foreign creditors until their duly proved claims were paid, whereupon the United States should relinquish its control and withdraw.

The intent of the United States in entering into that agreement was, first of all, to place all foreign creditors of Santo Domingo on an equal footing respecting the payment of their claims, but it also sought to place the Dominican Government on a stable basis in order that it might thereby encourage imports and so provide the funds required to meet its obligations. The United States Senate, however, refused to approve the agreement negotiated by the President, the objection being that his action was in effect an exercise of the treaty-making power, which requires the advice and consent of the Senate. It was also contended that the proposed agreement would pledge the United States to guarantee the foreign indebtedness of Santo Domingo and thus establish a precedent applicable to foreign claims on all American republics. To meet these objections the proposed agreement was withdrawn and a treaty was substituted in which the United States distinctly disavowed any liability for the external indebtedness of any foreign country, pledged itself to administer the fiscal affairs of Santo Domingo in the common interest of all creditors and disclaimed any purpose of acquiring Dominican territory. But the Senate, for purposes which have yet to be explained, adjourned without ratifying that treaty, leaving the President free to act in pursuance of his original agreement. This he has done on terms virtually making the United States a temporary receiver for the Dominican revenues, and the legality of the proceeding will have to be passed upon by the Senate at its next session.

This affair with regard to Santo Domingo calls increased attention to the attitude which the United States has been compelled to assume toward other American republics and their foreign creditors. That attitude has been misunderstood. Yet it is perfectly clear and honorable. The United States will not assert the Monroe Doctrine to shield a repudiating nation. It will not lend its protection to any government which seeks to defraud or swindle its creditors. Nor will it, on the other hand, consent to serve as a collector of bad debts for any other nation, nor will it undertake to guarantee the payment of obligations due from one nation to another. The highest desire of the United States is that every republic on the American continent shall pay dollar for dollar on its obligations and thus deserve the confidence of the world. With that end in view the American Government is willing to assume temporary control of the fiscal affairs of a distressed country in order to save it from possible humiliation at the hands of over-sea creditors. That is the why and wherefore of the whole proceeding.

AMERICAN LIFE INSURANCE.

INASMUCH as the European public is an extensive investor in American life insurance, the present agitation concerning one of the largest life insurance companies of the United States is really a matter of international interest. The affairs of this company present a remarkable example of the centralization of wealth. The company has a capital of only $100,000, and 52 per cent. of its stock is in the hands of a single holder. It has upwards of 600,000 policy-holders, representing a total of more than $1,000,000,000 of insurance in force. The assets of the company amount to $400,000,000 and the net surplus is $80,000,000. The management of the company has been inharmonious for a year or more, and this fact has been the cause of dissatisfaction among the policy-holders, many of whom now demand a voice in the control of its affairs and a division of the surplus. What they insist upon is that the company, which is nominally a mutual one, shall be made so in fact, and their demand has resulted in a tentative agreement whereby the policy-holders shall be permitted to choose a majority of the board of directors.

This agitation has had the effect of directing public attention not merely to the enormous accumulation of money by the great life insurance companies of the United States, but to the powerful influence which those concerns exert upon the financial and business interests of the country at large. There are three companies in the city of New York alone whose gross assets amount to more than $1,500,000,000 and their surplus to two-thirds of that sum. These companies, while technically separable organizations, are so interwoven in collateral enterprises that their operations are conducted without competition and with as little real friction as if they were under a single control. The officers of all three companies are interested in the same banks, trust companies, railroads, manufacturing enterprises and other great corporations, and in those concerns vast sums of money belonging to the holders of life insurance policies are invested. The three companies alluded to control a larger aggregate of money than any other three organizations in America. They can command a larger amount of ready cash on short notice than the Government itself, and their power, if they chose to exert it, could dominate the monetary interests of the continent.

These companies are solvent, of course, and their management is skilful and alert, but the average policy-holder is asking himself whether he is not entitled to a part in controlling the concern which his money has helped to build. The policy-holders have furnished the means to make these companies what they are. Nominally the surplus belongs to the policy-holders, but actually they get none of it. They are, therefore, asking whether it is necessary to carry such a heavy surplus or whether it should not be distributed. The present controversy over the control of one of these companies is merely a symptom which careful observers regard as the forerunner of important changes in the organic methods of American life insurance. We may be certain, however, that those changes, whatever they may be, will come gradually, after mature consideration, and will in no way impair the security of American insurance investments.

NEUTRAL ZONES AT SEA.

AN important measure looking to increased safety for neutral commerce at sea in time of war is under consideration by the United States Government, and may be submitted to the next peace conference at The Hague. It is a proposal that the great maritime powers shall agree to define certain zones in the Atlantic Ocean as neutral water and that no naval warfare shall be conducted therein. The purpose is to neutralize as far as possible the important routes travelled by merchant ships in trans-Atlantic commerce in order that such vessels shall be reasonably secure against destruction or injury by belligerent ships in time of war, and it is pointed out that the project is one in which all maritime nations have a common interest. The matter has been taken up in earnest by many individuals and organizations interested in American commerce, and it is hoped that it may enlist a hearty support in Europe. It is believed that if properly presented it will command the approval of commercial interests everywhere, the sole desire of its sponsors being to insure a larger measure of safety for the peaceful traffic of the seas.

The need of some such arrangement is forcibly illustrated by the findings of the international commission recently assembled in Paris to consider the grievance of Great Britain, arising from the action of the Russian Baltic Fleet in firing upon English fishing vessels in the North Sea. The commission found that, while the action of the Russian fleet was unjustifiable, the admiral in command could not be held responsible, although ships were destroyed and lives sacrificed in obedience to his orders! That verdict simply means that there is no security at sea for inoffensive ships against the timidity of a naval commander who mistakes them for the enemy's vessels. The doctrine is a monstrous one, and it places the commerce of the world in jeopardy in time of war, but there is no escape from it under international law as it stands to-day. By establishing neutral zones, however, in which no naval vessel shall be allowed to attack another ship the peril could be sensibly reduced and that, too, without prejudice to either belligerent in the event of war. It is intolerable that the commerce of the world should be at the mercy of two warring nations and subject to destruction without reparation. Any arrangement to remove that peril would be an international blessing.

Steel Rails for South America.—Orders for nearly 25,000 tons of American steel rails have been placed by railroads in South America during the past few days. Most of this tonnage will be shipped from Philadelphia.

THE ENEMY OF WAR.

WHILE events have not wholly fulfilled Bismarck's prophecy that the wars of the future would be determined not by armies but by bourses, the fact remains that international finance is making it more and more difficult for any nation to carry on a war without the approval and support of the business world. A nation may have armies and fleets, but unless she has money or credit she cannot prosecute successful campaigns. Military preparedness, of which we hear so much nowadays, means financial preparedness. It is money that counts after all, in war as well as in peace, and the nation that takes up arms without means of support foredooms herself to defeat. Moreover, the financial policies of the world are gradually combining in a great international system which in its very nature and purpose is opposed to war and which is calculated to make war more difficult and less frequent.

The effect of this policy is illustrated in the case of Japan. Until the outbreak of the present war Japan was hardly recognized as a world power and was not seriously regarded as a factor in international finance. But she has just negotiated a foreign loan of $150,000,000 on excellent terms, and in that transaction she has entered into the international system of finance and given hostages for peace. Henceforth in great national projects, whether of peace or war, she will have to consult the arbiters of world credits and abide by their decrees. Her recent loan was obtained for specific purposes, and specific resources are prescribed for its payment. Her obligations consequently bring her into the field of international finance and pledge her to the maintenance of credits and the promotion of peace.

This international system is illustrated in a negative way in the case of Russia. Her effort to negotiate another loan in France has failed. Why? Simply because the judgment of the financial world is that Russia's real interests require an early peace rather than a continuation of an inglorious and ineffective war. The great international banking houses, by declining to take up another Russian loan, have virtually declared that the war must cease and their decree means that Russia's war credit is exhausted. On the other hand, if Russia asked for a loan to be used exclusively for peaceful enterprises, the chances are that it would be subscribed three or four times over.

One of the useful lessons of the great conflict in the Far East is that the concerted influence of the financial and business world is a powerful enemy to war. It is pledged to the cause of peace, which is the common interest of mankind, and its restraining force extends to every quarter of the earth. Nations will continue to engage in war of their own volition, but they are speedily learning that they cannot successfully continue the prosecution of war when that course is opposed by the silent but irresistible influence of international finance.

Pensioning of Railroad Employees.

THAT the plan of pensioning worthy employees of railways in the United States is gradually growing in favor is shown by a report recently made on the pension department of several important roads. The plan was inaugurated about two years ago. Since that time sixteen of the railways in the United States, controlling an aggregate of 56,000 miles of road, have 3,291 former employees on their pension rolls.

The plan adopted by the Pennsylvania Railway system and indorsed by the Brotherhood of Locomotive Engineers is that each employee will give one day's wages each year, and funds will thus be provided by which the optional limit of retirement on a pension will be reduced from 65 to 60 years. The present rule is that when an employee has served ten years and has reached the age of 65 years, he may be retired at the discretion of his superintendent. At 70 years the retirement is compulsory. The pension received amounts to 20 per cent. of an employee's salary, based on the average of the last ten years of work.

Exports of Tobacco Increase.—Reports of the export trade in tobacco for the year 1904 are very gratifying to American growers and manufacturers of that article. The amount of leaf tobacco sent out of the United States in 1904 was 344,289,493 pounds, a gain of about thirty-seven million pounds over the previous twelve months. Exports of cigars, cigarettes and plug also increased in a satisfactory manner, the latter product showing a gain for the year of nearly a million pounds. The prices did not vary much from those for 1903.

Science Aiding Nature.

HOW science is made to assist nature in enlarging the productive capacity of the earth is shown in the operations of the Department of Agriculture of the United States Government. The chemists of the Department analyze and synthesize fertilizers and study the obscure habits of bacteria as no farmer could, teaching him in a pamphlet what he might not learn otherwise in generations. Now into the field also steps the engineer, with an even larger usefulness before him. Experts have figured that the food-producing area of the United States can be doubled by the solution of the two problems—which engineers alone can solve—drainage and irrigation.

Within the area of the United States Professor Shaler, of Harvard University, has estimated that the fields improvable by draining would add to the tillable area of the country more than 100,000 square miles, with a food-giving value greater than that of the State of Illinois, wherein the producing power of the soil would be far greater than that of any uplands. The complementary process—that of irrigation—promises to afford yet larger gains, including the area of the South and Middle West. The field before the engineer in the workshops is a great one and is ever increasing; but the solution of the greatest problems of the coming age lie still before him in the great out-of-door world, giving ever-increasing opportunities for men with large technical training.

A Year's Record of Export Trade.

A NEW record for the export of domestic manufactures from the United States has been established during the past year, and the figures for the first time have passed the $500,000,000 mark, which is an increase of $81,000,000 over that of the previous year. This increase occurs largely in iron and steel manufactures, copper, refined mineral oils and cotton. Considering iron and steel, the largest of these groups of manufactured articles and the most important because of the fact that it represents in a higher degree the finished product than is the case with certain other of the articles classified as manufactures, it may be said that the figures of 1904, $128,553,613, are more than four times as great as those of a decade earlier, the total value of iron and steel manufactures exported in 1894 being but $29,943,729, while the total value of iron and steel manufactures exported since 1890 exceeds $1,000,000,000, the precise total, considering in all cases the figures of calendar years, being $1,008,307,466.

The Conscience Fund.

A TWELVE-THOUSAND-DOLLAR contribution a few weeks ago to the "conscience fund" of the United States Treasury is the second largest sum ever anonymously turned over to the Government, the largest being one of $14,000 transmitted through the medium of a London clergyman several years since. This fund is unique in Government finance, being made up of money wrongfully withheld from the public treasury by crafty persons and afterward anonymously returned under the lashings of accusing conscience. During the ninety-four years in which these contributions have been separately tabulated they amount to about a third of a million dollars. They are entered among the miscellaneous receipts, and are applied to current expenses, like any other moneys of the treasury. The newspapers have unwittingly misrepresented the conscience fund by placing greater emphasis on the messages of eccentric people, until the impression has become general that only cranks are in this way conscientiously moved. Such is not the case. An examination of the letters on file at the Treasury would convince anybody that most of the contributors are sincerely repentant of some fraud on the Government, and take the only practical way of showing the genuineness of their regret. Barely does any money come without an explanatory letter, and it is unusual to have any name signed. Uncle Sam makes formal acknowledgment of all receipts from this source in the Washington newspapers. In fact, any money thus received is immediately posted on a bulletin in the Secretary's office, so that all comers may take note of it.

Some of the returns seem trifling. One poor fellow makes restitution for two loads of wood, which he had stolen from a Government reservation, saying: "Let him that stole steal no more." The religious element is seldom absent from these letters. Most of the writers profess a changed attitude of mind, brought about by a religious experience.

Improved Electric Fan.

WHEN the electric fan was first introduced it was regarded as a contrivance available only for hot-weather use, its function being to keep cooling air currents in motion. It has been so improved, however, that it can be made to blow hot or cold as desired. By inserting a small electric heater of convenient shape back of the revolving blades the fan can be made to send a warm blast across the room, the aforesaid blast having in one respect at least a great advantage over that from a register in the floor or wall, in that the grateful stream may be diverted downward instead of having its energy wasted on the ceiling, as in the case of the latter. The current being shut off from the heating feature of the combination permits the fan to perform its ordinary function—that of cooling the room.

The Popular German Ambassador.

AMONG the foreign diplomats stationed in Washington none enjoy a larger degree of popularity than the accomplished Ambassador of the German Empire, Baron Speck von Sternburg. Socially and professionally he is one of the most conspicuous figures at the national capital, and he is on terms of intimate friendship with the President and other distinguished officers of the Government.

"Baron Sternburg is, in the best sense of the word, an idealist," says a correspondent of the New York *Times*. "The task which he has set for himself is to establish between the American and German nations a cordial understanding and sincere friendship. He is indefatigable in his efforts to make the way clear upon which the two nations may meet. Many of his successes rest on a social basis, and those who have met the Baron assert that Emperor William could have no more able or congenial representative. He is a student and his collection of rare art treasures is unusually well selected.

"With his sincere sympathies for Americans, the Ambassador has completely adopted one of their most admirable qualities—a certain unconventionality which loosens the tongue of even the most reticent. The Baron realizes how essential it is on representative occasions to come into closer touch with those elements which he otherwise rarely meets. Whenever he speaks in public all are astonished, not merely at his perfect mastery of the English language, but by the certainty with which he speaks American to the Americans. On nearer acquaintance we can readily understand wherein the great attraction lies which drew together the President and the Ambassador. It is the temperament and the zeal with which both pursue the task which they have set for themselves.

"To a certain extent in the background of this friendship, and possibly only through outward circumstances prevented from being the third in the bond, stands the German Emperor, who through his character, views and sentiments sympathizes with them in their entire line of thought."

That Emperor William takes a deep personal interest in the development of the existing friendship between Germany and the United States was evinced in a recent interview with the Baron. "A number of events have occurred recently which plainly demonstrate the personal interest that the Emperor takes in all matters concerning America," he said in a recent interview: "That which the Emperor has in view is, above all the interchange of those characteristic cultural elements that each nation has developed independently of each other. He is well aware that they can learn much from each other. His idea of a reciprocal summoning of professors in order that the young people of both nations may become acquainted with each other's ideas is a plan that has received the warmest support from the centers of learning in both countries.

"The wisdom of speech has always commanded and always will command greater attention than the wisdom of books. Our learned men have long ceased to be mere theorists. They have become so fully initiated into life and its necessities that science to-day, even from a practical viewpoint, has become one of the essential factors in the solution of social questions. This is fully realized by the Emperor; hence he is striving for a closer union of the two nations—an intellectual union that will be mutually beneficial.

"The recent Imperial gifts to Harvard University come under the same category. These should introduce a new sphere of learning which in this country seems hitherto to have been only slightly developed, whereas in Germany it has received much attention. Through the completeness of the consigned material that portion can be utilized which is best suited to the particular circumstances which here exist. The invitation extended recently to a portion of the American clergy to participate in the consecration of the new cathedral in Berlin was issued by special wish of the Emperor, with the purpose of emphasizing the feeling of close religious connection that exists so strongly between some Americans and Germans.

"The principal and fundamental idea of the Emperor, promoting all these actions, is to remain in personal touch and to continue the personal exchange of thought with Americans. His deep interest in the United States and in its people dates back to his early youth. He has an exceptional—I might almost like to say instinctive—appreciation of the individuality of this nation. During recent years, in which he has so frequently found opportunity to come into closer contact with America, his knowledge of all conditions here has increased astoundingly. His faculty for quickness of perception is assuredly world-famous, and all the more noticeable when a subject interests him keenly.

"In the most important questions," the Ambassador continued, "the politics of America and Germany are in complete harmony. With regard to the Far East no country interceded more warmly and with more conviction for the indivisibility of China and the policy of the open door, later on proclaimed by America, than Germany. After the Chinese and Japanese war these principles seemed endangered. The Peking Government called on Germany to use her influence to save Manchuria and the threatening division of the Chinese Empire was prevented. Manchuria remained Chinese. That we shortly after should occupy Kiao-Chau arose from the necessity to acquire a strategical stronghold such as the other great Powers possessed. Without such a base Germany's word in the Far East would have been a voice in the desert.

"It has frequently been claimed that by the acquisition of Kiao-Chau we were attempting to divide up China and to close the door. It probably suffices if in this matter I state that in this German protectorate each nation enjoys equal rights, and the policy of Germany there is that of the square deal. Germany has taken every occasion to emphasize that she considers the integrity of China the condition sine qua non for the future peace of the world and for the prosperity of her trade. When the present war began it was again Germany which was the first Power to side with Secretary of State Hay, and, in the first instance, interpose for the neutrality of all the Powers and later for the inviolability of the Chinese territory.

"As to Germany's policy in the southern hemisphere, I want to say a word, because in former years I have frequently noticed gross misrepresentations with regard to her political aims in the republics of South and Central America. Her interests there are purely commercial. All she wants is a prosperous trade. A large portion of the German emigration for many years has been directed toward South America, especially toward Brazil, where the German has always been warmly welcomed by the Government as an expert in farming and forestry, and as a model citizen. In the three southern provinces of Brazil there are to be found, I should say, about 500,000 Germans and people of German blood. In all these regions the German population, as statistics show, is rapidly falling off. The process of amalgamation of the German element with the native in Brazil closely resembles that which we notice all over the United States. The larger number of the German immigrants in Brazil are soon turned into citizens of the Republic.

"Queer rumors have been spread from time to time that Germany's goal in Brazil was a colonial empire. As every educated man nowadays understands the German policy in South America, an explanation seems almost needless. Those who have spread those strange stories of Germany's aggressive policy in South America might just as well have pointed out that Germany intended to build up a colonial empire in Pennsylvania. The United States Ambassador in Brazil said that last winter during a visit here that the Germans in Brazil were most loyal to their adopted country and made the best citizens. It has on various occasions been pointed out by America's leading statesmen that a strong German emigration to South America was the best guarantee for a prosperous development of her republics.

"Just as little as these Germans in Brazil would receive, or, more correctly, accept, any directions from the Government, would the German-Americans. Here to speak of a direct or indirect influence of the Emperor is simply and absolutely unjust. It is but natural that it should afford the Emperor no end of gratification when he sees that the Germans—German culture, art and science especially—are attaining a high standing and importance here. His wish is primarily that this acknowledgment and appreciation should arise from the native Americans and assuredly does not tend to the purpose of winning the German-American as a kind of half-citizen who, with two souls in his breast, can do credit and honor neither to the old nor the new fatherland.

"Every one knows that the Emperor is a most decided opponent of doing things by halves. Leaving no room for any misconception, he himself has frequently stated that he expects all the Germans in America to do their complete duty as citizens, and hopes from them the full measure of American patriotism which he so highly esteems. That which they have received as German heirs they may and should, to be sure, preserve and cherish. On the other hand, President Roosevelt has taken more than one opportunity to show clearly and positively to how great an extent this country is and always must be indebted to German thoroughness, manners and customs."

Better Consular Service.

OUR friends abroad will be gratified to learn that the United States consular service is to be still further extended and improved. The President of the United States, deeply impressed with the importance of promoting the interchange of commerce between this country and others, has made careful studies of the diplomatic and consular systems, and the result is a definite announcement that everything within his power shall be done to make these systems still more efficient and useful. Consular representatives of demonstrated ability and usefulness will be retained in the service, but the laggards and incompetents will be dismissed. There is an element—fortunately a small one—in our consular service known as "pink tea" representatives, whose policy is to do as little real work and get as much pay as possible. These gentlemen must go. No amount of political or social influence is likely to keep them in the service during the present administration, and as their four-year terms expire they will fail of reappointment. The President and Secretary Hay are of one mind regarding the improvement of the diplomatic and consular service, and all appointments under the present administration will be made with this end in view.

American Machinery and the Chinese Awakening.—One of the signs of the impending awakening of China is seen in the interest recently shown by the viceroy of the provinces of Liangkiang in American textile machinery, particularly that for the manufacture of tape, braids, embroidered and plain ribbons, to be operated either by hand or steam power. It is believed that the viceroy is about to introduce such machinery into his provinces on a large scale.

Electricity on Elevated Railroads.—Electrification of the elevated railroads in New York has increased their capacity by one-third, according to Lewis B. Stillwell, electrical director of the Interborough Rapid Transit Company of that city, and has decreased by one-fifth the time spent on trains by the average passenger. It has demonstrated that the cost of maintenance of electrical equipment of rolling stock is materially less than that of steam equipment, and he adds, has proved that electricity can render more reliable service than steam.

A New Administration.

THE inauguration of President Roosevelt on March 4th was the most brilliant and perhaps the most hopeful that has ever been held in Washington. The pageant, magnificent in color and extent, reflected the fact that the United States has developed in recent years into a great world-power. The contingents from Porto Rico and the Philippines presented a fine appearance and were vociferously received. The rough rider regiment which Colonel Roosevelt commanded during the war with Spain and a troop of real cowboys from the Southwest attracted attention and added a touch characteristic of America.

The good feeling exhibited by both the great parties at the inauguration and the favorable comments in Democratic as well as Republican newspapers have a precedent only in the "era of good feeling" under President James Monroe. President Roosevelt evidently has the confidence and respect of the people, and this augurs well for the success of his plans, and public opinion has come to be a potent influence to-day. Some of the things which the President desires to accomplish are tariff revision, regulation of railroad freight rates and the completion of the Panama Canal.

Business men are quite generally agreed that the tariff rates are too high, and that a more moderate tariff would stimulate both import and export trade. Of late years the value of exports from the United States has enormously exceeded that of imports. In Great Britain, on the other hand, exactly the reverse is true, her imports exceed her exports. A nation, unlike an individual, cannot for any great length of time continue to export largely in excess of its imports. The natural rise and fall of prices will take care of that.

The greatest obstacle against which the average manufacturer and shipper has to contend in the United States is the rebate on freight charges which the great railroad systems grant to favored shippers, the favored ones being usually large corporations. This rebate puts the smaller manufacturer at a tremendous disadvantage, as compared with those to whom the rebate is allowed. Many articles are now sold on a small margin of profit over the cost of manufacture, and it is plain that freight rates play an important part in the earning capacity of a factory. Unfair treatment and the oppression of the weak by the strong will always arouse the indignation of the people. This case of the railroad rebates is no exception to the rule. The feeling against some of our large corporations is intense. Mr. Roosevelt has everybody with him in his efforts to make a rebate impossible and to insure fair treatment to all.

The problem which confronts the administration, as regards the Panama Canal, is: Shall it be a sea level or a lock canal? The eminent engineers of the Panama Canal Commission may be safely trusted to find out the best way of connecting the two oceans. Likewise the administration may also be trusted to assume the burden of construction in the spirit of sparing no expense or effort to make the canal all that is desired.

Peary's New Ship Is Launched.

WHILE representatives of many nations have from time to time made efforts to reach that region of mystery—the North Pole—the persistent work of Americans to touch that desired goal has been remarked throughout the civilized world. No explorer has tried as hard or so often to see that region that up to the present time has proved inaccessible for daring vikings of all nations as has Lieut. R. E. Peary, U. S. N.

Defeat has but stimulated this courageous officer to renewed efforts and his latest plans bid fair to be crowned with success. Funds have been raised to defray the expenses of another dash for the pole under his leadership, and the new vessel that will sail northward bearing the hopes and best wishes of all his friends was launched a few days ago at Bucksport, Me. She was christened Roosevelt, and Mrs. Peary shattered the customary bottle of champagne across the prow of the steamer as she slid gracefully into her element.

The vessel, for which funds were furnished by the Peary Arctic Club, of New York, is described as "a three-masted fore-and-aft schooner-rigged steamship, with auxiliary sail power." She is built of white oak, the frames being treble and set close together, which with double planking, making the walls from 24 to 30 inches thick. The keel is 16 inches thick, but false keels and keelson form a backbone 6 feet high the entire length of the vessel. The bow is backed by 12 feet of solid deadwood.

At a luncheon Peary said: "The ship is the first ever constructed in this hemisphere for polar work. It is believed she will be the ablest craft yet built for this purpose. The ideas embodied are the result of careful study of various classes of ships which have been used in arctic navigation."

Large Quantities of Chain are being exported from the United States, and the industry has grown greatly in importance during the past few years. For the finer grades bar iron is used and is manufactured by machinery up to 1¼ inches in diameter. Heavier chain than this is made by hand.

The World's Lead Supply.—The entire annual output of lead for the world is a little more than nine hundred thousand tons. Three countries furnished nearly two-thirds of this supply. These are the United States, with two hundred and seventy thousand tons, Spain about one hundred and seventy thousand tons and Germany with a little more than one hundred and forty thousand tons. The remaining one-third of the world's lead is divided among many countries, no one of which produces over a hundred thousand tons.

American Harness and Saddlery.

FOR a long time foreign buyers strenuously adhered to the notion that harness and saddlery manufactured in England and France was superior to that made in the United States in strength and durability, as well as in beauty of form and finish. It was not until after American manufacturers had captured more than their share of prizes in the great international competitive exhibitions that foreigners really began to investigate the merits of American goods for themselves.

Now it is no longer a debatable question, since competent and impartial judges in all countries where American harness has been introduced to any extent admit that it is, grade for grade, not only equal, but superior to that made in any other part of the world. The reasons for this may be found in the exacting requirements of users in this country where there is a greater demand for good harness than in almost any other part of the world.

Here, also, are thousands of skilled harness-makers who are always studying how they can best meet the requirements of buyers and thus gain a larger share of their trade. Every detail is considered and tested before being adopted in the manufacturing branch of the business.

To make a first-rate harness good material, proper proportion and good workmanship are requisite. First, if the material is not good, no kind of skilled workmanship can make it durable or give it a finish that will be retained for any considerable time. Next, the proportions, which, if they are faulty, will be a positive weakness that will condemn the product, even if the material is first class, and, lastly, the workmanship must be of a high order, so as insure the good results that accrue from the other requisites. Form and decoration are incidentals. They are the esthetic qualities which, while they do not produce durability, greatly increase the money value of the work. It is because the American harness possesses to an eminent degree all these qualities that it stands foremost among the world's products of its class. No better leather than the best American-finished product is cut in any part of the world, while our medium grades surpass in quality those made elsewhere, owing to bark tannage.

The necessities have never compelled our tanners to seek other finishers than Americans, and it is not likely that they will ever have any excuse for using the substitutes now employed by the tanners of other countries. All other conditions being equal, harness leather tanned with bark, is far less susceptible to injurious effects from exposure than that prepared by chemicals or other inferior astringents. The effect of mud on leather is injurious, as it so absorbs the grease, hardens and rots the fiber, that no kind of treatment can restore it to its former condition; hence any kind of tanning that will best prepare the fiber of the leather to resist the inroads of this enemy is to be preferred. American manufacturers are always seeking for the best, and for many years it was deemed a waste of time to attempt to make a better leather than the imported article. Now, however, it is found by experience and fair trials that foreign harness leather prepared abroad is inferior to American. Government army tests fully sustain this claim of our manufacturers, while the use of the Yankee product in draft and carriage harness confirms the assertion that it is superior in strength and durability.

Starting with the best stock, the American manufacturer seeks to secure the best results by so proportioning the several parts of a harness that each will carry its share of the working strain brought to bear upon it. Attention to these matters has made the American farm, express and draft harness the strongest that can be made. *Not a pound of leather is used that does not contribute its full share to the strength of the harness,* and so unnecessary weight is avoided. That these qualities are fully appreciated abroad is proved by Paris and London houses adopting the American heavy draft, double and single harness. To further enhance the value of the harness a free use is made in this country of horse appliances which contribute to convenience and utility. The coach and coupé harness, whether modeled after the French or English style, has many distinct features, and is both lighter and stronger.

The American light trotting harness is the ideal harness of the world. It stands alone, the embodiment of the highest art in designing. In form, finish and durability it is considered a marvel of mechanical excellence. Symmetrical in outline, artistic in finish, simple in construction, it gratifies the taste of the most cultivated, while its durability makes it the strongest combination of straps of light weight that can be put together. The American harness manufacturer excels in taking care to insure the desired results without depreciating quality, and thus produces a much higher grade of goods at a given price than can possibly be made under the old systems of manufacture. Another and important feature is the broad range of work produced by Americans from the simple harness made up of a bridle, collar and traces, to the most elaborate and elegant coach harness.

Our manufacturers now have facilities for doing their work with a celerity that would have been considered impossible a few years ago. Owing to the immense demand from the home market, the American harness manufacturers have never made any great effort to extend their trade abroad. They are now beginning to realize, however, the necessity of widening their market, and many of them have already established valuable foreign trade connections. They are now competing with the best European manufacturers, and are prepared to furnish goods unequaled in beauty of style and finish, as well as in strength and durability, at prices as low, if not lower, than can be obtained elsewhere. Foreign importers of harness and kindred goods will find it to their interest to establish business relations with American manufacturers.

The Day of Alchemy.

(William Conger Morgan in *Harper's Magazine.*)

At the beginning of the last quarter-century the manufacturing world found itself face to face with a serious problem which came as the natural result of the wide extension of its industries. With every ton of manufactured product that the mills turned out for which the world was willing to pay, there appeared the hundredweight or ton of the by-product for which no purchaser could be found. In every process there was so much waste, so much that could not be utilized, yet required care. But the manufacturer's perplexity was the chemist's opportunity. To utilize rather than remove became the object of his thought, until, in this later day of alchemy "waste" material is being changed into veritable gold.

Three-fourths of the prepared paints on the market to-day owe their existence wholly or in part to the by-products of the petroleum industry. Carload after carload of dynamite comes from the glycerine recovered from the "sweet waters" of the candle manufacturer and the waste of the soapmaker. The myriads of buttons used speak of their rise from the hoofs and horns of the slaughter-house floor.

The by-products having been thus called to the aid of the industries, have grown to such proportions as to outrank some of the older interests, and what was formerly waste is to-day the staple article produced, the former manufactured product having become the by-product. Some are doubtless familiar with the old method of "burning charcoal," in which the wood was piled in heaps, covered with turf, and then set on fire. The smoke rose lazily week after week, while the pile was watched day and night lest the fire should break out and consume as well as char. Finally the mound was torn apart and the coal obtained. By this method three-quarters of the weight of the wood disappeared. An investigation proved that an amount of fuel gas equal in weight to the charcoal produced was lost, besides about 1 per cent. of wood alcohol and acetic acid. One per cent. seems a small fraction, but in this instance these products are of prime importance. To-day the process is entirely changed. The wood is piled on steel cars and run into huge masonry chambers heated by furnaces. Here a few hours accomplish the work of the same number of weeks in the older process. The charcoal stays on the cars while the volatile portions pass off. Lime takes the acid out of the mixture, the alcohol condenses and the gas is piped around to the furnaces and burned. Should this gas furnish insufficient fuel the charcoal is burned also, and thus one cord of wood furnishes the means of heating the next.

The process then becomes, not one for the production of charcoal, but for the manufacture of wood alcohol and acetic acid. This 1 per cent. of wood alcohol made in the United States alone in one year is worth $4,000,000, the acetic acid another million, while the whole amount of charcoal produced would sell for less than this last figure. In some regions where wood is abundant and manufacturing interests few and far distant the chief value of the charcoal lies in the potash salts which it contains. It is, therefore, burned, and from the ashes of the old vegetation there is extracted the life-giving potash for the new. No longer do we hear of "charcoal burning"; the day of "wood distillation" is at hand.

By the combination of capital certain industries have become localized. The gigantic abattoirs of Chicago, Kansas City and Omaha replace a thousand smaller establishments, thus focusing the accumulated by-product. With the handling of increased amounts of material the cost of treating each ton is correspondingly less and its utilization becomes a safe financial proposition.

In the manufacture of steel the greatest care and exactness are required, slight amounts of impurities affecting greatly the properties, and hence the value, of the product. It has been found that the presence of less than 1 per cent. of carbon, nickel or manganese renders it harder and more resistent to strains, while small amounts of phosphorus and sulphur make it so brittle that an ore that otherwise could be manufactured into first-class steel is fit only for cheap castings. Millions of tons of this phosphate ore, heretofore quite worthless, are found in the United States alone, huge deposits extending throughout the entire Appalachian system. The discovery that by lining the converters with limestone all this undesirable impurity can be removed and the metal then worked up into steel as good as the best has given to these deposits almost as great a value as that of the purest ores. Nor does the saving cease here, for the slag coming from the furnaces working this ore contains a large amount of phosphate. This constituent is necessary for all plant life. Without it not a grain can form, a fruit ripen or a seed mature. In this "Thomas slag"—so named after the discoverer of the process—the phosphate has been found to be in a condition peculiarly suitable for its assimilation by vegetable life, especially after it has lain on the fields and "weathered" for some time. It is, therefore, in the greatest demand for fertilizers, and thus the revenue from the slag helps to pay the cost of producing the steel.

In the metallurgy of other ores, ideas, and with them methods, have changed correspondingly. Not a quarter-century ago testimony was given in a judicial inquiry as to the cost of handling ore at one of the best-known mines in the United States. It was to the effect that a good-paying gold ore should carry $20 to $30 worth of metal to the ton. If it did not contain $10 worth of gold it was of no value, as it would cost fully this to extract it. It has been demonstrated recently that where water is plenty and the ore concentrated by "sluicing" the cyanide process will handle a ton for 35 cents. The new Elmore process of concentrating with oil as well as water promises to bring it down to less than 10 cents per ton. Abundance of ore carrying $2 worth of gold offers ample inducement for capital to-day.

Nor does the saving stop with the present workings. The cyanide process is retroactive. Whereas the earlier methods of extracting gold allowed from 20 to 50 per cent. of the precious metal to escape in the "tailings" the new methods will extract as much as 98 per cent. To recover what has already been wasted is certainly a chimerical idea, but this is what is actually being done in every gold mine in the country. Wrapped up in the huge mountains of "tailings" is an immensity of treasure scarcely to be dreamed of. Many an "abandoned claim" is to-day alive with industry; many a company has ceased to dig for its ore because of the enormous amounts already above ground. Moreover, in the manufacture of cyanide, owing to the increased demand for it, everything that was useless is now put to good use. Two hundred and fifty thousand dollars' worth of leather scraps from the boot and shoe factories, a hundred thousand more of scraps of hoof and horn from the packing establishments, ten thousand dollars' worth of scrap iron, three hundred thousand dollars' worth of potash from the ashes of plants, together with some charcoal or coal dust and the mixture is complete. Heat it up and leach it out into the fire and back to the vats once more, and from this mass of waste comes a million dollars' worth of cyanide every year to recover many times its own value of precious metal.

The United States is the greatest cotton-producing region in the world. More than half of the total supply is grown within the borders of the Southern States. While it may be said with much truth that American cotton clothes the world few would surmise how large a share it might also contribute toward feeding the world. In the cotton plant two-thirds of the contents of the ripe boll is seed, while one-third only is fiber, which, like the tufts of the dandelion, is given that it may ride the winds and be scattered wide. Until recently man has been reversing Nature's idea and using only the wings of the cottonseed. That a valuable principle could be expressed from the seed has long been known, but it is only since the war that its products have assumed any commercial importance. At present more than a million tons of seed are annually sent to the presses. The refined oil resembles olive oil so closely in its properties as to be practically indistinguishable except by chemical means, and even here the most delicate series of tests is required to distinguish with certainty, no single test being adequate.

Hence it is that much of our exported cottonseed oil has come back to us from France, Spain and Italy as "pure olive oil." From it artificial butter can be made, just as nutritious and far more wholesome—since freer from all kinds of bacteria—than the finest dairy product, and since it will keep better it has some decided advantages over the older conventional product. Cottonseed oil helps to fill practically every lard pail in the country, and if, because of the very general way in which it has been used as an adulterant, it cannot be said to have made the race more godly, yet in the shape of soap it certainly has made all of us more cleanly. The cake from which the oil has been pressed furnishes a very good cattle food, and it can further be used as a fertilizer, being one of the best nitrogen sources available. Forty million dollars is added to the wealth of the cotton belt every year by the saving of this one product.

Wherever two grains of wheat are made to flourish where but one has grown, a saving of the very greatest significance has been brought about. To triple or quadruple the yield from an acre is, however, an every-day occurrence in those sections where a study is made of the conditions of the soil and the needs of the particular crops to be planted thereon. A fundamental tenet of the new science of agriculture is to put into the soil those constituents which are naturally lacking, and yet are needed for the life of the plant. Fortunately for the welfare of man and significantly for his teaching, most of these substances abound in what was once called waste. Waste from the cottonseed and waste from the packing-house furnish the nitrogen; waste acid from oil-refining mixed with bone and with rock previously worthless gives the phosphoric acid; potash from ashes and waste lime from the kilns—all this goes to make up forty million dollars' worth of fertilizer to yield an increase in production many times its own value, a saving most certainly worth while.

But great as has been the benefit conferred by the by-products upon industry, in some instances their utilization has come as a forced measure and most unwelcome innovation. That legislation should be required to induce a firm to turn into its own pockets thousands of dollars each year, or month of the year, certainly seems a novel proposition in these days when many of our laws are framed to prevent a too close adherence to this very idea on the part of the great corporations.

The manufacture of soda, both baking and washing soda, is a very extensive industry. A hundred years ago but one method was used to supply the total demand. As a constant by-product in the process, a gas was poured forth from the stacks of these factories every day in the year, not less fatal to everything in the vegetable world than the fiery blast that swept down from the crater of Mount Pélee. For miles around each of the establishments the land was transformed from garden to desert, and in a country as closely settled as England the evil effects soon began to be felt in the surrounding towns, where every edged tool grew dull and every metallic instrument became corroded. The aid of Parliament was soon invoked to put a stop to this devastation, and a bitter fight ensued, in which the wealth and influence of the corporations were freely used in every way to prevent the passage of a measure which, as they said, would practically prohibit the manufacture of soda without decidedly increasing the cost of production, but to no avail. The companies were compelled to erect huge towers to prevent the escape of the gas by absorbing it in water, and there resulted ton after ton of that product that we know as hydrochloric or muriatic acid. There was no market for the article, and the companies were prevented by law from throwing it away, for if they ran it into the streams it killed all the fish, withered the vegetation and rendered the water unfit for drinking and factory purposes as well. If thrown upon the ground, as the water evaporated the gas escaped, and this was just what the law was enacted to prevent. The acid must be destroyed, and the managers were at a loss to find out how to do this at the smallest possible cost. It was only a few months before a method was discovered of changing this valueless acid into bleaching salt, for which there was then and has ever since been a large demand. Instead of permanently increasing the cost of soda this legislation lowered the price of it and of bleaching salt as well, and to it we of to-day can largely return thanks that we are permitted to use white linen pockethandkerchiefs and collars instead of the yellow unbleached material.

A condition exactly similar is true of the smelting process. Aside from the deposits of metallic copper in the Michigan region, practically all the ores of copper, zinc, lead and nickel consist of compounds of the metals with sulphur. In smelting the sulphur is burned out and gives rise to enormous quantities of sulphur dioxide—that gas that has taught man to postpone for a moment the pleasure of his cigar when lighting it with a sulphur match and has caused many a housewife to mourn for the untimely fading and passing away of her most cherished house plants. At Leadville, Joplin, Galena, Argentine, El Paso and other sections of the country not only treeless but also grassless deserts have been produced by the large smelting establishments. Near Mount Shasta stretches of the finest timber land stand blasted because of this waste, which, were it utilized, would doubtless be sufficient to erect a new plant for the company every two or three years. By what is known as the "new contact process" this gas can be transformed into the best of sulphuric acid, and where smelting establishments are near enough to the manufactories using this article large revenues are being derived from this waste product every year. However, since sulphuric acid is very cheap and freight rates very high the economical utilization of the gas in the Shasta and other regions similarly situated, far removed from manufacturing centers, has not yet been accomplished.

Large quantities of coal are annually distilled for the purpose of making illuminating gas for our cities or coke for the blast furnaces. Since the gas as it comes from the retorts contains several noxious substances which, when burned, produce an unpleasant and harmful odor, before passing it into the pipes for distribution it becomes necessary to purify it by washing several times. In the water of these "scrubbers," as they are called, a tar collects, most foul-smelling and offensive. In former years it was the custom to run this waste into the streams, but because of the pollution caused by it in running waters, even far removed from the location of the gasworks, State legislation soon prohibited the practice and compelled the companies to free themselves from it in some other way. Expensive furnaces were first constructed to burn the tar, while the water was simply allowed to drain out on the fields and evaporate. A chemical investigation soon demonstrated that many a valuable substance was hidden away in this foul waste, and it was soon submitted to distillation. Benzine and some other similar substances useful as solvents, together with carbolic acid, were the first products saved, the remainder being burned as before. Nevertheless, the recovery of these few substances was a paying proposition.

Benzine was the touchstone fated to work great changes in coal-tar. Hitherto produced in small amounts at a very great cost, but little was known of its properties, but an investigation soon proved it to be the mother of a host of children, each more important than the parent substance. Coal-tar is a veritable treasure-house, from which the world of to-day is drawing practically unlimited supplies of the most varied nature, so changed in every appearance that few persons ever think of the intimate relation between some of the constantly used household and personal articles and the waste from the gasworks. Mention of the world aniline will at once recall the magnificent colors with which the finest fabrics of to-day are satisfactorily dyed, yet from aniline to benzine is one short step, from benzine to tar another, so that the iridescent hue of the silken gown is but two or three steps removed from the tar that may soil it.

Fifty years ago the springtime fields on the Mediterranean shores were ablaze from Gibraltar to Jerusalem and back again to Ceuta with the flowers of the madder. From the time of the Pharaohs whose mummied remains have come down to us wrapped in the scarlet clothes of ancient Egypt, until half a century ago, the races of the world had used the madder root as the source of one of their principal dyes, and these fields were reckoned among the resources of those countries wherein it grew. The discovery of anthracene in coal-tar and its manufacture by inexpensive methods withered the madder fields beyond the possibility of recovery while the world lasts. The traveler of to-day in Asia Minor and India sees what will be denied to him of later day—broad field of indigo, from which is obtained that one dye which until recently refused to be humbled by the coal-tar upstarts. But even it has fallen at last, and these indigo fields will soon have passed away. From coal-tar comes naphthalene and from naphthalene indigo, the very same article that has come from the shores of the Mediterranean year after year to give color to our fabrics.

But as though it were not enough for coal-tar to please the eye in myriad ways, purified and worked over, it must needs appeal to the sense of small and of taste in the most enticing and pleasing manner. The very substance that stimulates the olfactory nerve when the aromatic smell of musk, the spicy scent of cloves, or the sweet perfume of heliotrope is wafted to us on the evening breeze, is made to-day from coal-tar; also the essences of vanilla, cinnamon and wintergreen, those chief favorites among all flavoring extracts. Moreover, a substance six hundred times sweeter than sugar, a pellet of which half the size of a two-grain quinine pill will sweeten a cup of tea or coffee, comes from the same source. If, after partaking too heartily of confections colored, flavored, sweetened and scented with coal-tar products, you should "feel indisposed," half the drugs in the pharmacopœia are at your service, and you may preserve the balance of your sweetmeats for another day with benzoic or salicylic acid, both the drugs and the preservative being furnished by the coal-tar also.

Thus have been derived the means wherewith to satisfy the ever-increasing demands of an exacting civilization, a treasure greater than that which flowed from India and Arabia into the coffers of the Italian state until Venice ruled the world with a sceptre of gold. Deep-laden galleons from distant Mexico and Peru freighted to Aragon but a pittance compared with the wealth which lies about us on every side, needing but the touch of the modern industrial spirit to be revealed to our scarce-wondering eyes. Nor will the mines of this waste land ever give out, for with increasing population will come greater need and growing revenue. For waste is simply that which has been once used and will yet be used again.

A Rolling Roadway.

A NOVEL and important invention—the first rolling roadway ever built—has recently been completed and placed in operation in Cleveland, U. S. A. By means of it teams with heavy loads are carried up a 20 per cent. grade—forward 420 feet and upward 65 feet in four minutes or less. Thousands of spectators have witnessed this interesting sight, while at the same time numerous representatives from other cities and even from Europe interested in the various problems of transportation have watched its operations with interest.

In Cleveland, as in many other cities, the wagon route for a large volume of heavy traffic is necessarily up several steep grades. The city proper is upon an elevation and the docks and several of the principal railroad depots are at the foot of long inclines, over which several streets lead. On Factory street, the site of this first roadway, the incline for many years has been traversed by heavily laden teams, which climbed the grade at a snail's pace and with great difficulty. At the same time it has never been possible to haul nearly as heavy loads up this incline as could be hauled were the start made from the top of the hill.

Under the new régime the team draws its load to the foot of the rolling roadway and is carried to the top without any effort at all on the part of the horses. In addition to the saving of labor on the part of the horses and the saving of time to the owner of the vehicle it is believed that there will be a noticeable saving in blacksmith's bills. The loads hauled in this manner are fully equal to those possible upon a level road. Horses soon become used to this invention—in fact, few of them frighten even on the first trip.

The rolling roadway is a great endless belt which is operated by means of electric power and which weighs ninety-nine tons. It is the invention of Col. Isaac D. Smead, of Cincinnati, who worked nearly three years on the drawings before they were even seen by others. The rolling roadway is considered a wonderful piece of engineering.

It is from the tower at the top of the hill that the electric power is applied. When the wagons have been clamped to the roadway at the start, the man in the tower is notified by means of an electric signal and the roadway begins to move at the rate of some four miles an hour. Once at the top of the hill and upon the level the machinery stops and the clamps holding the wagon are loosened. Ten vehicles can be placed upon the roadway at one time. The daily capacity is about 600 vehicles.

Since the completion of this roadway the railroads in the vicinity have begun the creation of a large warehouse and are planning to put in additional team tracks. The activities in that locality have more than doubled.

Now another roadway of this kind is to be built in the same city at a cost of $100,000. While the first one is built along the grade of the hill this one will be suspended in the air. The street will be extended by the building of an iron bridge and the rolling roadway will be at a right angle to this extension. There will be substantial iron supports 66 feet high and 12 feet apart under the viaduct, and the supports of the roadway will be the same distance apart.

Discovery of Monazite.

THE great increase in the manufacture of arc lights within the past few years has stimulated the search for some metal that can be used in the lights necessary for commercial purposes. It is of interest to manufacturers that a new product called "Monazite" has been found. It is in crystal form—a species of cerium—and while in general aspect it resembles iron, is both ductile and malleable.

The latest discovery announced of this mineral is from Greenville, S. C., U. S. A. Monazite is said to have been found in large quantities in the creeks thereabouts, and tons of the mineral have been removed and assayed by reliable mineralogists. A large per cent. of pure Monazite and a trace of gold were found in each sample. It is said that a New York concern has secured rights from most of the land owners in this neighborhood to mine for the mineral wherever traces are found. Monazite is worth in a refined state about $1,000 a ton.

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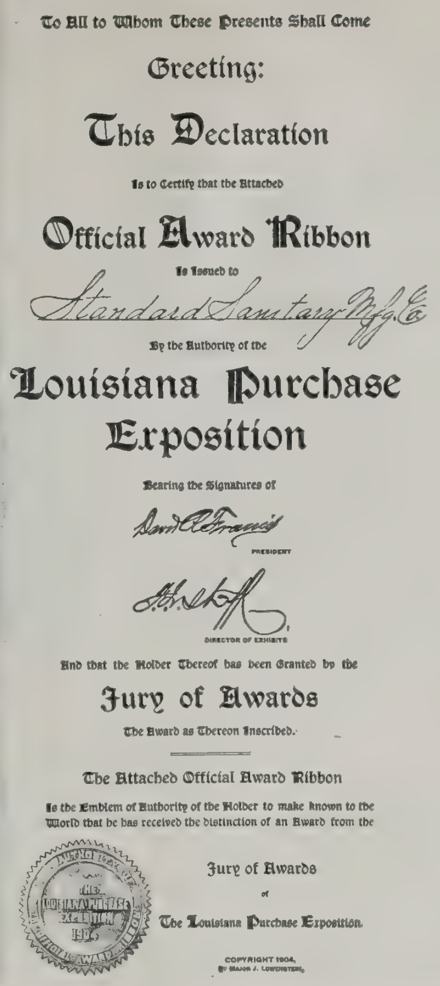
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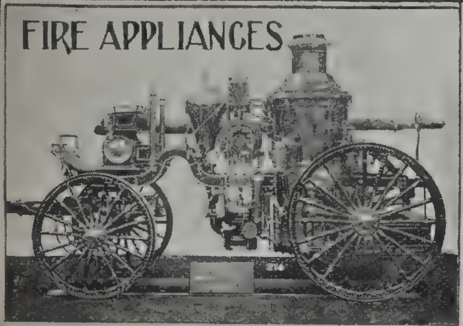
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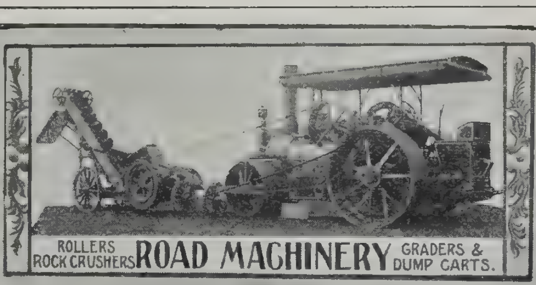
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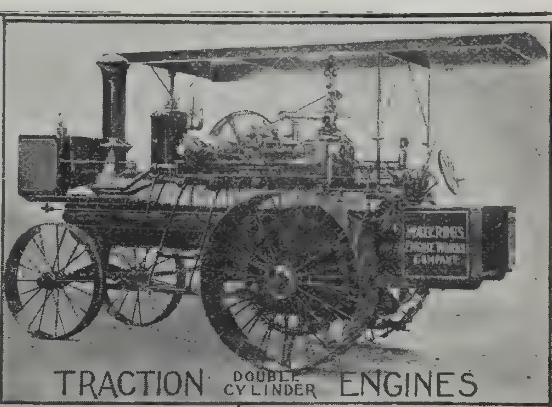
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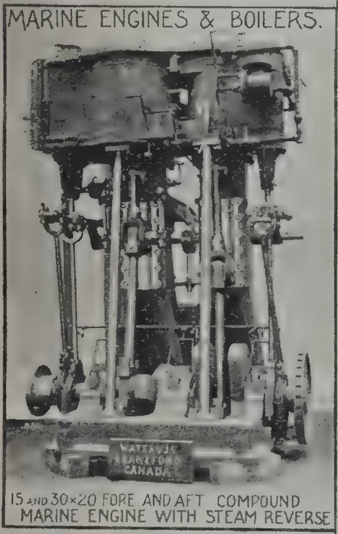
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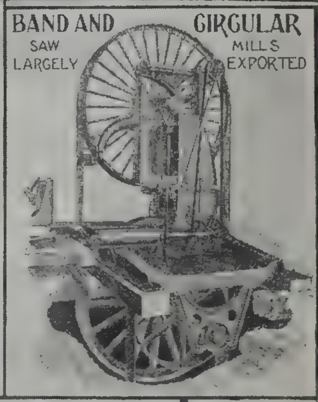
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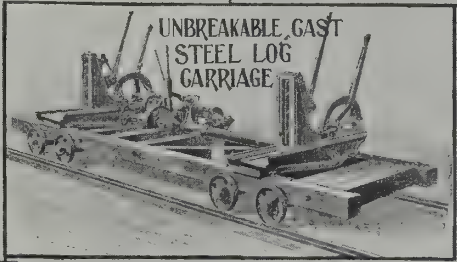
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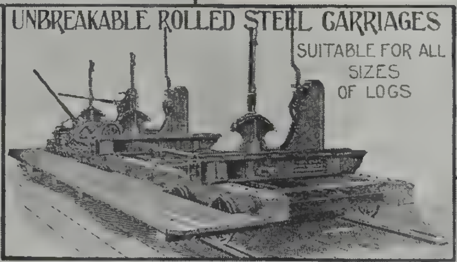
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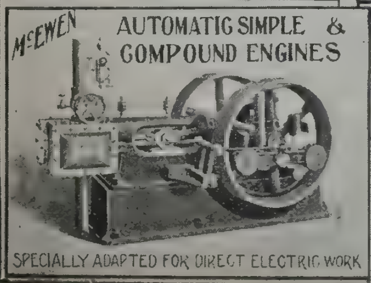
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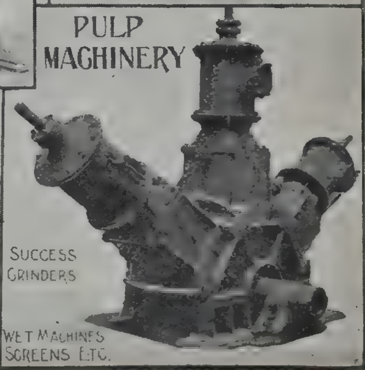
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War and Commerce.

IT may interest readers of THE AMERICAN EXPORTER to know that the war in the Far East, instead of depressing American exports to Japan, has really served to stimulate them. It is true that these exports at present consist largely of materials required for the prosecution of the Japanese campaign in Manchuria, but there is also a satisfactory volume of commodities of non-military character. The bulk of these exports, however, as the New York *Times* points out, comprise steel rails, bridges and locomotives for a military railway across Korea; large quantities of leather for the making of army boots and harnesses, flour and salmon for feeding the forces in the field, besides rifles, ammunition and torpedo-boats. For several months the port of Tacoma has afforded a striking illustration of the energy in forwarding of Japanese army supplies. During October and November four steamships—the Inverness, Hero, Quito and Viking—carried from Tacoma 15,000 tons of Pittsburg steel rails, together with large quantities of spikes, fishplates, etc., these steamers going to Yokohama or Muroran for orders and proceeding thence to Chemulpo for delivery of their cargoes on Korean soil. So great was the hurry to assemble these rails at Chemulpo that a special price was paid to the Viking, a small but swift steamer just out of a Norwegian shipyard, to insure her delivery of the last of the rails within a specified time.

The impressment of steamships by the Tokyo Government has materially affected the carrying trade between Japan and America, resulting in the entire withdrawal of the Japanese steamship line between Yokohama and San Francisco and the reduction of the service between Yokohama and Puget Sound from six to two.

Another effect of the war is the practice of rigid economy by the Japanese people as part of the domestic program for aiding the Government. For this reason America's exports to Japan of bicycles, electrical supplies and luxuries of all kinds heretofore exported to that country will show a decrease this year. The war is causing no diminution of Japan's ability to continue exports on a normal basis. In fact, there is a probability that exports will be actually increased in consequence of the general desire to maintain the nation's earning power. Very much of the work ordinarily performed by men, now absent at war, is being continued by women. Tea picking and firing, the manufacture of matting, silk culture, and all of the other national industries are progressing in the same manner as before.

Flour shipments to Japan were unusually large just previous to October 1st, when the duty on flour was increased. Since that date shipments have been more spasmodic, though just now showing a tendency to become more regular. Coast flouring mills are supplying the demand at this time, though last winter, under a special rate, a large quantity of Minneapolis flour was shipped to Japan, China and Siberia. Rice is the great staple of Japanese foodstuffs. The rice crop for the year reached nearly 51,000,000 koku, being 20 per cent. above the average crop and over 9 per cent. better than last year's crop.

From all the Pacific Coast ports there have been shipped large consignments of meats and canned goods intended primarily for the Japanese army. As far as possible, these shipments have been kept secret, it being the desire of the Japanese purchasers not to inform the enemy of their transactions. There is reason for believing that Russian agents have watched the loading of many cargoes at various Pacific ports. Commerce with Japan has, nevertheless, been uninterrupted save for the ten-day raid of the Vladivostok squadron, which caused the San Francisco lines to temporarily refuse contraband cargo. Insurance rates were increased, but lately, and particularly since the destruction of the Port Arthur fleet, insurance rates have dropped to about normal. The Japanese are purchasing increased quantities of cheap grades of salmon from Puget Sound, British Columbia and Alaska. Japanese agents specially arranged for the putting up on the Alaska coast of a quantity of dog salmon, an inferior variety seldom eaten except by Indians. Shipments of leather from New York and other Eastern centers, through Pacific Coast ports, have been greater during the last few months than ever before.

Harnessing the Tides.

WITH the increasing use of the tremendous energy of rivers and brooks to propel the machinery of modern industries, there is more diligent search for some means of utilizing the force of the tides of the sea for similar purposes. An interesting experiment with that end in view is in progress on the shore of the Pacific Ocean, near Santa Cruz, Cal., U. S. A. Two wells have been sunk in a cliff to a level 6 feet below low water line and connected with the sea. In one well is a float, in the other a force pump. An incoming wave from the sea lifts the float, which falls with its 1,600-pound weight, when the wave recedes. This weight pushes on the piston of a force pump in the other well and sends the water through pipes to a tank 125 feet above. The motor has been working satisfactorily since 1897, and thus in a small way a great problem seems to have begun to reach solution. Mighty enterprises, however, are also on foot for utilizing sea power on a very large scale. Power producers have their eyes on the almost unlimited energy embodied in the tides in the Bay of Fundy. Twice a day the flow fills the great Minas Basin to a height of nearly 40 feet; then ebbing, leaves it bare. This is the greatest rise and fall of tides in the world, and its aggregate power is far beyond that of Niagara. A series of locks and basins sending this mighty force through penstocks, and with turbines converting it into electricity, is said to be the mechanical basis of the proposed scheme.

Jules Verne's Influence on the Modern Development of Electricity.

A CABLEGRAM from Amiens, France, says that Jules Verne, the great writer, died at that place on March 24th. Telegrams of sympathy from all quarters of the globe have been received, many of them coming from children and scientists. Mr. Verne continued writing until recently, when he was obliged to suspend all literary work, as well as his duties as a municipal Councillor.

In this connection it is an interesting question to trace to what extent masters of fiction have stimulated invention. In replying recently to a speech of congratulation from some of his friends, Mr. Verne felicitated himself upon the fact that nearly all the romances of his fertile imagination were becoming accomplished facts. In his "Twenty Thousand Leagues Under the Sea" he not only suggested the submarine boat, but he pointed out all the possibilities of portable electric lights and electric energy stored in convenient and handy receptacles to break out into a beacon of brightness at the slightest touch of the human hand.

In no way can we trace the advent of man from lowest barbarity to highest civilization to greater advantage than in the study of electricity. As education grew, as our modern needs increased, as life became more livable, the demand for more knowledge of that subtle power, electricity, became a dominant factor. So we trace, step by step, the growth of our minds and the development of our souls in the changes brought about by the pine torch, the tallow candle, the lamp, the gas jet, and now—the completion of God's greatest gift to man—the electric light. While we do not wish to detract from the great achievements of Edison in perfecting his many inventions in electrical research, nor from Marconi in putting wireless telegraphy into practical use, it is a fact that Mr. Verne many years ago, in his extravaganza stories, set the world to thinking, and it only took men like Edison and Marconi to find the way.

Health as an Asset.

THE increasing regard of the Government for the health and general welfare of the wage-earner is one of the most significant tendencies of American industrial life. Under modern economic conditions the health of the toiler is recognized as one of his most valuable assets which should be preserved with scrupulous care. In the United States, therefore, employers as well as the public authorities are devoting increased effort to establish and maintain such conditions in factories, shops and other concerns where labor is extensively employed as will insure the largest measure of safety for the health and comfort of employees. This tendency is specially manifest in the great manufacturing State of Massachusetts, where the State Board of Health, after careful investigation, has decided that factory conditions are bad, and that the danger to the health of the operative comes, in large measure, through the neglect of that individual himself to observe simple and obvious sanitary precautions. The report of the State Board of Health discloses a lamentable indifference on the part of workmen to their surroundings. In shops where dust is created in large quantities, and where the death rate from consumption is remarkably high, many of the workmen have been known to discard the simple appliances which are introduced to minimize the danger. In one brass-polishing shop, for instance, where hoods connected with a forced draught are put over the buffer-wheels to take away the dust, some of the workmen have removed the hoods because they were "in the way," allowing the dangerous and poisonous dust to be scattered through the atmosphere. Spitting on the floor is exceedingly common in industrial establishments, and one consumptive can poison the whole atmosphere of the rooms, spreading death and disease among his fellow-workmen.

Electric Freight Lines.

THE value of electric freight lines to the farming industry of the tributary territory is strikingly illustrated in the operation of such a system now in use in one of the rich agricultural regions in the State of Ohio. This road is operated with special reference to the needs of farmers. On stated days, as often as deemed necessary, a freight solicitor, without fee, calls up farmers and finds out what they have to sell; he then ascertains where in town a sale can be effected, often closing a transaction on the spot. This line carries sheep, pigs and cattle into a stockyard of its own, whence dressed meat is despatched on a considerable scale. A cold storage department, about to be established, will add to this branch of the business, and collect from the farmer, at his very door, vegetables and fruit paid for in cash at current prices. The quick and frequent transit of this road, as of every similar line, makes it preferable to steam transportation. Fruit, vegetables and live stock arrive at market in the pink of condition and command the highest prices. Often electric carriage occupies but six hours, where a steam line, impeded by the cross currents of a great city's traffic, demand thirty-six hours. During the summer this line buys artificial ice at low figures and distributes it at a respectable profit. The passenger traffic is cultivated as shrewdly as the freight business. A picnic ground and a clubhouse are objective points for thousands of excursionists from June to October, special rates being granted. Ordinary fares are 1½ cents a mile; books good for 600 miles are sold at 1¼ cents a mile. These books are available on any interurban line in Ohio and connecting roads in Indiana, forming a traveler's currency well worthy to be copied by other States.

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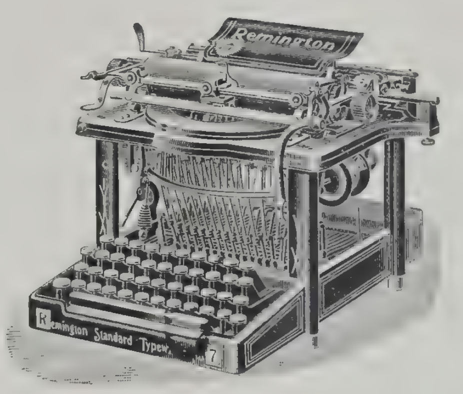

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"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

Furthermore, the "Kee Lox" carbons improve with age, so that the longer they are kept in stock the better they become. Hence, they can be imported in large quantities at one time without risk of loss in deterioration of quality.

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Foreign Demand for American Clocks.

IT has been remarked that "the tick of the American clock is heard around the world." This statement is literally true, for the American clock is found everywhere, and often in places where it is the only reminder of Western civilization and home life. The ordinary clock as a time indicator is truly a representative of the "universal Yankee nation." Although clocks are made in other countries, certain peculiar styles of clocks which are neat in appearance, perfect timekeepers, durable in construction and selling at prices within the means of every household in the world, are of American manufacture.

It is impossible to estimate the number of clocks in use throughout the United States. The home that is without a clock is indeed a rare exception. The most of them have two or more; indeed one in every room is so usual as not to attract special notice. How much this timing of every action has to do with the development of American activities it would be hard to say, but it has doubtless much influence in this direction. A country with few clocks may be set down as one plodding along in a haphazard way at the tail of progress, and a house without a clock is one where neither intelligence nor order rules. American clocks are therefore missionaries of civilization and monitors which are ever urging people to be up and doing everything promptly and at the proper time.

Although the American clock is universal, it has become so without any special effort on the part of the manufacturers. The United States is full of clock salesmen, but the American clock is its own traveling agent abroad, and carries with it its own best recommendation. A first-class agent it is, too, as is proved by the fact that it pushes its way in the world's markets to the value of nearly $1,500,000 per annum. The only countries in the world whither our clocks are not directly exported are Roumania, Switzerland and Turkey, and they reach those countries through the medium of England and other European countries.

England is our greatest customer for clocks, taking nearly one-half of our entire export, followed, according to value, in this order: Australasia, Canada, Japan, Brazil, China, British East Indies, Germany, Mexico, Portugal, Spain, etc., down to the remotest island. Our Consul at Auckland says: "The extent to which American watches and clocks are advertised at New Zealand is extraordinary. There is scarcely a jeweler's shop or toy store in any of the principal thoroughfares of any of the cities of the colony that has not a placard out, in large letters, announcing 'American watches and clocks for sale.'" The Consul-General at Shanghai says that the greater part of the clocks imported into China are American, leaving a very small percentage for Continental Europe. The Consul at Singapore, in a report on trade in the Straits Settlements, says that for cheap and good clocks of pleasing shapes and appearance—just what suits Asia—the American manufacturers beat the world. The Consul at Beirut, Asiatic Turkey, wherewith we have no direct clock trade, says that the cheap but superior American clocks should find large and ready sale in that market, if the trade were pushed, as they are known already and highly appreciated in some parts of the Turkish dominions.

These citations of testimony, selected at random, go to show how well the world at large appreciates our American clocks. And now, why is this? Simply because the American clocks are beyond comparison the best clocks in existence. They are made of better material—better metal and better seasoned wood—and by more skilful and scientific workmen, and consequently are much better timekeepers, than any foreign-made clocks. Clockmaking has been from the very birth of this Republic one of its special and leading industries. It has enlisted the ingenuity and energies of some of the ablest and brightest men this country ever produced. The best inventive and mechanical talent has been brought into requisition by our citizens interested in the trade, resulting in the production of the finest and most perfect clockmaking machinery in the world. All these agencies have combined to secure for the American clock the admirable mechanism and wonderfully accurate timekeeping qualities for which it is renowned, and which have won for it the unrivaled popularity which it enjoys everywhere. Add to this, that the American clocks are unequaled in beauty of appearance, and that the manufacturers pay the most careful attention to all matters connected with packing and shipping their goods, and it is not difficult to see why our clocks have taken first place in the world's markets. Besides this, the cost of the American clocks is reasonable, and well within the limits of general salableness. The German clocks are cheaper, but they are very inferior to ours, and cannot compete with them except among the poorest class of purchasers. On the other hand, the French clocks, which are so much affected in fashionable circles on account of their elegant appearance, are not only much more expensive than the American clocks, but they are notoriously unreliable, and, in fact, practically valueless as timekeepers. They are merely serviceable as costly ornaments, and no one pretends to depend on them as clocks. The anecdote of the young lady and her lover who made too long calls is both amusing and illustrative of a positive fact: "You remind me of a French clock," said she. "Why so?" he inquired. "Because you never go."

American clock manufacture is, moreover, characterized by immense variety. All kinds of clocks ever made or dreamed of (except the inferior and worthless clocks) are produced by our manufacturers—the ordinary wooden case mantel clocks; marble and marbleized clocks; clocks of various metals, of porcelain, glass, ivory, pearl, plush, etc.; ornamentally painted and carved clocks; electrical clocks, time and detective clocks for banks, tower clocks, regulators, cuckoo clocks, illuminated night clocks, and clocks with various kinds of ingenious and complicated devices attached for special purposes.

Richest Farm in the World.

IN view of the efforts of the State of Kansas to prevent the Standard Oil Company from doing business within its borders, it is interesting to note that the great monopoly owns in Kansas what is probably the richest farm in the world. The crop of this farm, however, is not grain, nor cattle, nor cotton, but oil tanks. The farm consists of 400 acres of land; its value is nearly $2,000,000, and its annual crop is more than $8,000,000. On this property are fully fifty enormous tanks, each having a storage capacity of from 35,000 to 60,000 barrels of oil. A space of eight acres is set apart for each tank, and around each is a dyke of earth about 5 feet in height, thrown up to catch the oil should a leak be sprung or to fight away the flames should they come in the wake of a stream of oil that had burst its confines.

Each of the tanks is made of sheet steel and cost about $4,000. They are about 50 feet in diameter and 30 feet high. They rest flat on the ground. The steel floor is covered with heavy black oil paper, and a conical roof surmounts the whole. A stairway leads to the roof from the ground. In the middle of it is a door locked with a padlock, a special design, which cannot be duplicated, and to which only trusted employees carry keys.

In these tanks is stored the surplus oil of the Kansas field. The production has been increased greatly. A year ago it was about 13,000 barrels a day; now it is more than twice that figure. These tank farms are connected with the oil fields everywhere. Big mains run into each of the six large producing counties, and from these laterals extend to wherever there is any oil. The moment an operator can show a production of fifty barrels a day the Standard will build him a pipe line.

More than $6,000,000 is invested by the Standard in pipe lines in Kansas. Solid trainloads of pipe and sheet steel were daily sights in the field last summer. Each main line is supplied with a pumping station, which forces the oil through the pipes. Where the oil does not run by gravity the Standard has been paying a cent a barrel for the steam used in pumping, which in itself has been a good source of income for the operators.

Forty men are employed to ride the pipe lines and gauge the oil. Their business is to look for thefts and leaks. Oil stealings have not been infrequent in the past. A line will be tapped at some secluded point and a wagonload of oil taken, to be sold later to the refinery people.

These gaugers visit the oil wells, measure the oil and run it into the line. They give the operator a ticket and he sends the accumulated ones to the headquarters on the first of the month and gets his check. An affidavit must accompany each claim, in which is set out the name of the owner of the royalty. Few of the wells are operated by the owners of the land, most of whom take life easy on their monthly royalties. These they receive direct from the Standard office. In this way they feel sure the operators are not defrauding them.

The Kansas field is divided by the Standard into two districts. The dividing line runs just on the north side of Neodesha. The company does not believe that the oil in the north end of the field is as good as that on the south end, and a difference of 20 cents a barrel is made. The man with a well just north of the line gets that much less than a man with a well 100 feet away, but on the south side of it, and this has aroused much feeling.

Excellence of American Cheese.

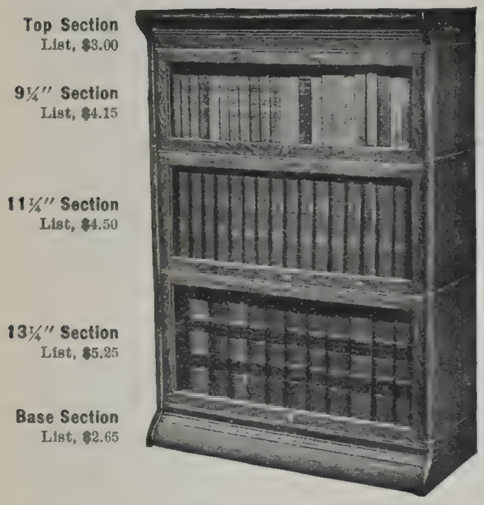
DURING the past year Wisconsin produced 100,000,000 pounds of cheese, the valuation of which is estimated at $10,000,000. No other State in the Union except New York produces anywhere near that amount. New York exceeded that figure by about 3,000,000 pounds, though only a few thousand dollars in the figure which the product brought in the market. Wisconsin, according to Dairy and Food Commissioner J. Q. Emery's last report, has more cheese factories than any other State. But it is not the amount of cheese made, nor the number of factories in which Wisconsin enjoys its greatest fame as a cheese-producing State. It is in the quality. Wisconsin cheese carried off all the grand prizes at the St. Louis Exposition in competition with cheese from all parts of the world. Even New York cheese men admit that Wisconsin makes as fine cheese as is to be found anywhere in the world.

The Cultivation of Corn in Iowa.

A RECENT despatch to the New York *Herald* says that the authorities of the Iowa Agricultural College, located at Ames, in that State, which started the movement for improved methods in raising corn, are now beginning to wonder what sort of a conflagration they have kindled. The entire corn-producing country of the West has taken up the matter, with the result that there is serious talk of the possibility of adding a billion bushels to the annual production before two more crops are gathered.

The railroads are running special "seed-corn trains" all over the corn country. Experts in corn culture have been engaged to lecture at every railway station, telling the farmers how to plant and cultivate their corn, so that it is confidently expected that the annual crop will be largely increased before many more crops have been harvested.

Knock-Down Office and Home Furniture for Export.
The "GUNN" K. D. Sectional Bookcases.



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6¾ cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10½ inches deep and 32½ inches long. Made of selected quarter-sawed oak and handsome polish finish.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.

THREE-SECTION CASE, as shown, complete - - each $10.76
SIX-SECTION CASE, as shown, complete - - each $17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

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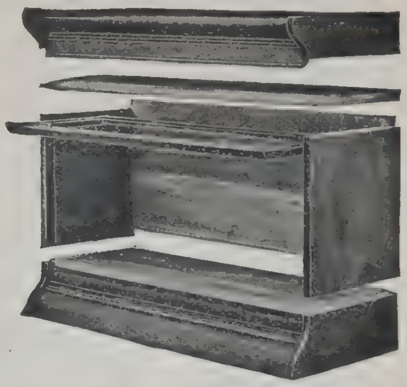
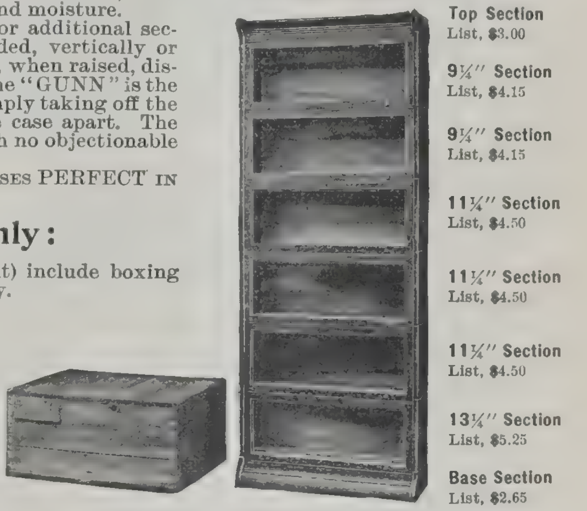
We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) **construction.** It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

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Modern Uses of Telephones.

By B. A. Kaiser.

DOES the average man of to-day ever stop to consider what the invention of the telephone by Alexander Graham Bell means to him? The telephone has become the greatest of public utilities, bringing it closer to the every-day life of the people than any other invention of the nineteenth century. As given to the world the telephone was not a commercial instrument. To make it of practical use, a host of other things were necessary. Many of these did not exist; others were not then adapted to their present uses. To-day the telephone itself is one among many appliances which make telephoning possible. It is the chief factor, but the others are necessary. To the experts of the Bell Telephone companies the world owes the present perfection of nearly all these valuable accessories. The modern switchboard, with its thousands of miles of wire and millions of parts, the ingenious devices with which it is surrounded that it may be successfully operated, the hard-drawn copper wire of which telephone lines are composed, the cables in which hundreds of wires are enclosed, the telephone conduits under the city streets—all these and many other things were devised to meet the wants of the Bell Telephone companies. It is by means of them that the telephone has been transformed from a plaything into a necessity in business and social life.

The telephone is indispensable alike to the banker, the manufacturer and the merchant in the city and to the farmer, the lumberman and the storekeeper in the country. Confined at first to large centers of population, it is to-day showing that it is of equal value on the farm and in the forest. Telephone conversations already outnumber telegraph messages in the proportion of 30 to 1, and the total number of pieces of first-class mail, the letters and postal cards of the people is less than twice the telephone messages which go over the wires of the Bell system. Judging the future by the past, the telephone will soon outstrip the mails as it has already distanced the telegraph.

That the Americans are to-day the world's greatest telephone users is due to their readiness to adopt new ideas and to the efforts of the Bell Telephone companies to give telephone service to all parts of the land. The man whose telephone is connected with the Bell system is in touch with lines which are within reach of 50,000,000 people in this country.

The wires of the Bell system reach to Canada on the North and Mexico on the South. They span the continent from the Atlantic to the Pacific, and extend from the Great Lakes to the Gulf. They include 3,958,991 miles of wire, furnishing connections with 19,928 cities, towns and villages, or nearly double the 10,602 incorporated places in the United States as shown by the last census. Six thousand three hundred and fifty-eight miles of wire are under water and 1,618,691 miles are buried in conduits under the city streets. Nearly ten million connections were made daily through the Bell exchanges in 1903, a total for the year of over three billion.

Connected with the Bell lines is apparatus costing over two hundred millions of dollars. The switchboards alone are worth $20,000,000. Single switchboards often present an expenditure of $300,000. To operate the system and keep it in repair requires the services of 53,795 persons. That the latest inventions and improvements may be brought into use, appliances which have cost millions of dollars are discarded. The saving of a second in the time required for the transmission of a message means the spending of a fortune.

The adaptability of the telephone to special conditions is shown in many ways. The contractor of to-day who undertakes extensive construction work regards the telephone as an indispensable ally. The construction crew in the tunnel are separated from the outer world by air-locks and bulkheads; the daylight is shut out by the walls of the prison-like structure and the tons of earth and stone around it, but the workmen are at all times able to hear voices of those in the world without. To-day when the ocean liner makes fast to her dock, above the cables of hemp and steel which bind her to the shore are stretched the tiny telephone wires which place those on board in communication not only with persons in the seaport cities, but with friends and relatives wherever the long-distance lines extend. Telephone wires are connected in much the same manner with instruments on railroad trains whenever a stop of any length is made. A number of the larger steam railways of the country have installed telephone systems for their internal private needs, spending thousands of dollars for copper wire to construct circuits hundreds of miles in length, in order to place in close communication the various important division offices, one with the other, and all with the general offices of the company, thereby relieving the burden on the telegraph and train mail service; reducing traveling of officials and employees to a minimum, and expediting the business of every department, thus insuring economy in operation, time and labor.

The peculiar needs of certain localities are illustrated by the method of doing business in the cotton districts of the South. Ordinarily local telephone business exceeds that of the long-distance lines, but at one of the exchanges of the Bell system in Texas only two operators are required for the local business, while at times in the busy season eight have been needed on the toll lines. This is because cotton houses in Memphis, Dallas, New Orleans and other cities keep in close touch with the whole field of operations, and it has become the regular thing during the harvesting season for the operators in the selling centers to devote several hours a day to telephoning, calling up place after place to get the latest news of the progress of the harvest.

The long-distance service of the Bell companies is so complete that it is becoming more and more a factor in business life, and in ways which only a few years ago were unknown, and which are still among the novelties of telephony. The long-distance telephone is one of the greatest of time-savers. An illustration is found in the case of a man who, having been taken ill when about to start on a journey, telephoned to the people whom he had intended to see in a half-dozen cities, and transacted his business so successfully that his proposed trip was unnecessary. By a few hours' use of the long-distance lines of the Bell Telephone companies he saved several hundred dollars in money and a week's time.

To give to 19,000 cities, towns and villages, reached by 3,958,991 miles of wire, a service uniform in all essential details, and capable of harmonious operation, methods of construction have been adapted to the peculiarities of the climate and physical geography of different sections of the country. Especially in the building of long-distance lines climatic conditions must be given consideration. Throughout the Northern States pole lines are jeopardized by storms of sleet and snow; in the mountains, the avalanche and the snowslide must be guarded against; in the Mississippi Valley the danger from floods and windstorms must be considered, while all the lines which gird the coast or cross waterways are subject to their peculiar accidents.—*New Haven Palladium.*

Irrigation Reclaims Great American Desert.

THE richest agricultural district in the world is developing from the Great American Desert, which, less than forty years ago, was considered an obstacle to progress, but now is considered as a real blessing. The area of this desert has never been definitely ascertained and there has been no reliable statistics computed relative to it. It covers thousands of acres, that through an elaborate system of irrigation have been transformed from a desert into farms and plantations, and the great work of development has scarcely begun.

The cultivated land not only is capable of bringing forth three crops of alfalfa hay in one season, but may be continuously cropped for years without exhausting the boundless richness of the soil, which is made up of volcanic ash and decomposed volcanic rock. It is sparsely covered with sage brush, cactus and allied desert plants. Here and there are trails made by range stock that travel over it in search of scattered bunch grass and other forage. The hills in the distance look like great ash heaps, and they paint the landscape with dry tints of gray, yellow and purple. The cactus, or prickly pear, is typical of the desert. Horned toads scurry about, basking in the clear sunshine or hiding under rocks and among the roots of the sage brush. A white man's home in the desert may be at first a prairie schooner. One family lived for seven years in their wagons until the crops paid for their land. They now have well-built barns, an artesian well with windmill attachment, a full equipment of farm machinery, a large house surrounded by a beautiful lawn and orchards, and all through scientific irrigation.

But while water thus makes the desert bloom, too much water does harm. If too much water is turned into the irrigation furrows, it washes away the good soil and little by little deposits it on the farms further down. All the land contains more or less alkali, but not enough to damage it or the crops. When much water is turned on this alkali is dissolved and carried on to the farms lower down.

The Government has sent experts to the region to teach the farmers the waste of water in overirrigation, the damage to their own land and the almost criminal ruin of the land of their neighbors. They are also teaching the owners of drowned-out and alkalied lands how to wash the excess of alkali out by subdrainage without taking away the good elements of the soil.

As a result of experiments near Cheyenne on a vast plateau 6,000 feet above the sea, profitable crops can be grown on lands which heretofore have been universally regarded as suitable for nothing but the sparse grazing of cattle and sheep. The area of this class of land in the Northwest is almost immeasurable.

Macaroni wheat affords a good instance of a crop which is capable of revolutionizing the values of tens of millions of acres of arid land. "The land available for macaroni wheat," said Mark A. Carlton, cereal specialist of the bureau of plant industry, "extends on an average the width of the United States, and from the 98th to well beyond the 102d meridian, with a general yielding capacity of half this vast area of thirty bushels per acre and the other half of fifteen bushels. Macaroni wheat will grow with 10 inches of rainfall and yield fifteen bushels to the acre where ordinary wheat is an absolute failure. This is two bushels more than the average wheat yield for the United States.

"There are many other crops with great possibilities, and which thrive on but slight moisture, including splendid forage plants. I might mention kafir corn, the sorghums, millets, broom grass, as well as new kinds of oats and barleys of wonderful drought-resisting powers, the emmer of speltz and a long line of others. We are constantly finding new grains and forage plants in the Caucasus, in Algeria, Turkestan and other dry countries which will bring under cultivation amazing areas of the Great American Desert, looked upon in former years as absolutely unfit for agriculture."

World's Largest Gas Generator.—A single unit illuminating gas generator in Oakland, Cal., U. S. A., that is producing three million cubic feet of gas every twenty hours, is said to be the largest apparatus of its kind in the world. Because of the scarcity of coal in the vicinity of Oakland and the abundance of oil, the latter fuel is used in making the gas. The generator is operated by one man and his hardest work is said to be to open and close the valve by which the supply of oil is regulated.

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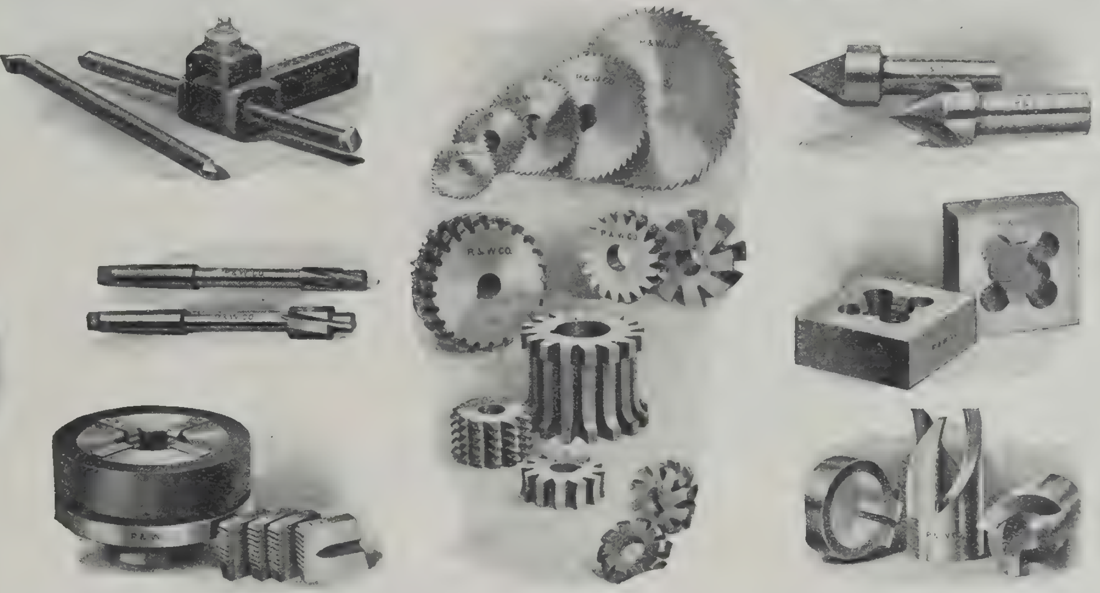

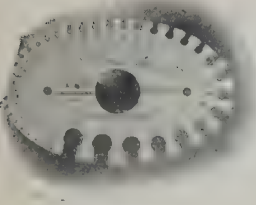

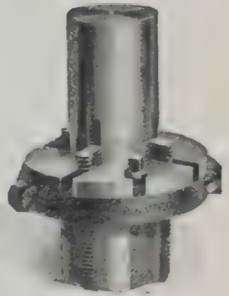

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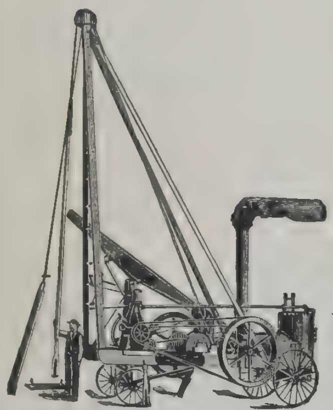

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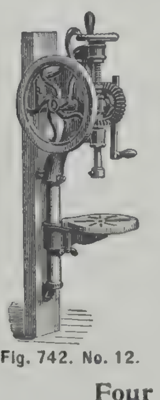

Fig. 742. No. 12.

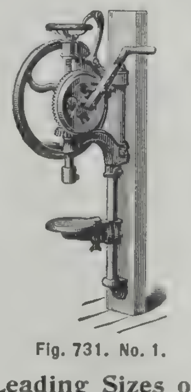

Fig. 731. No. 1.

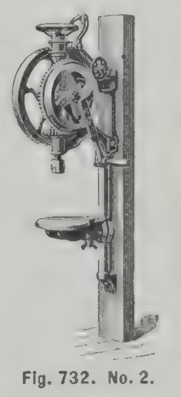

Fig. 732. No. 2.

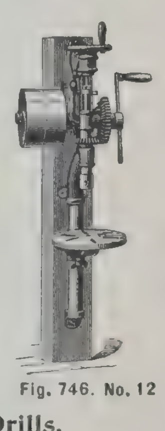

Fig. 746. No. 12

Four Leading Sizes of Blacksmiths' Drills.

WE HAVE 10 OTHER SIZES.

They are reliably constructed, light-running and work perfectly.

CATALOGUES IN ENGLISH AND SPANISH.

Methods of Heating and Ventilating.

IN the progress of civilization more efficient arrangements for heating and ventilating buildings have gradually been adopted. Fireplaces, stoves and furnaces have, in the order named, been introduced as means of warming. For small rooms, as in dwellings, they answer very well, but the effect of opening and closing windows and doors and of changes in the atmospheric conditions is too well appreciated to need recital here. It will certainly be admitted that a building can seldom be found where the heated air is properly and satisfactorily furnished and distributed by a furnace; some of these influences are sure to act, and at times it will be impossible to heat certain rooms without the closing of doors or shutting of registers in other rooms.

Experience has clearly demonstrated that no system of ventilating buildings can be operated independently of the adopted methods of heating them. It is, in fact, necessary to success that the heating and ventilating systems be combined. To meet this requirement the combined fan and steam heater has been largely adopted. This system, says the B. F. Sturtevant Company, of Boston, is at once practical, successful and economical, for air, being the natural conveyor of heat, may when properly warmed and circulated, perform the double function of heating and ventilating rooms.

When the rotary fan is so arranged as to withdraw the air from a building it is called an exhaust fan. This method of ventilation has its objections, and, as a rule, should be avoided. When exhausting air from a building a partial vacuum is created within it and all currents and leaks of air are inward, so there is no way to definitely govern its introduction or to provide for warming it. The better method of heating and ventilating is to force the air into the building by means of a blower and allow it to escape through apertures. The admission of the air in this way is completely under control, and by first passing it through a chamber containing coils of pipe heated by steam or hot water, it may be raised to any desired temperature.

The Caronia—The Cunard's Largest Steamship.

THE mighty revolution wrought in ocean transportation was emphasized by the arrival in New York on March 5th of the Caronia, of the Cunard line, the largest vessel ever built on the Clyde. It was the maiden voyage of the steamship, and seven days were required for her run from Queenstown to New York. The average speed for the voyage was 16.33 knots—nearly one and one-half knots less than her contract speed. On her trial trip the boat made nineteen knots.

The Caronia was christened by an American woman, the wife of Ambassador Choate, and Mr. Choate made a speech at the launching. She is 675 feet long, 72 feet 6 inches wide amidships and 97 feet from keel to bridge. Her weight when launched was 13,000 tons and her displacement, when loaded to her full capacity, will be about 30,000 tons. She has eight decks, all of which, except the highest or boat deck, are designated by letters, beginning aloft, from A to G.

The ship is fitted with twelve large quick-firing guns, magazines and equipment. In addition, she has a steel-lined treasure chamber. The vessel was built by John Brown & Co. at Clydebank, Glasgow. Her keel was laid September 21, 1903. The Caronia is a duplicate of the unfinished Carmania, except that the latter is to be driven by turbine engines.

Discover Cure for Bovine Tuberculosis.

IT was recently announced by the University of Pennsylvania that experts working in many directions have at last proved by experiment that bovine tuberculosis is curable by vaccination. These experts have achieved definite results, after years of study and continuous experiment with antitoxins.

Dr. Leonard Pearson, dean of the Veterinary School of the University, concerning the experiments with antitoxin, covering a period of four years, in which cattle were reared and maintained under constant exposure to disease in the most virulent form, makes the following statement as to the results obtained:

"Dr. Gilliland and myself have been conducting experiments by the process of vaccination, using virulent tubercular bacilli cultures from bovine animals. During the last four years 100 cattle have been under experiment by different methods and under varying conditions.

"During the last few weeks we have killed six cattle. Four of these were vaccinated and two were not. The first inoculation was two years ago, when all of the six were stabled with highly tubercular cows. The post-mortem revealed that the four which were vaccinated were free from tubercular lesions, while the other two, which were not vaccinated, were tubercular.

"By virus the animal can now be protected from any degree of infection. We now propose to vaccinate young cattle. They rise up and take the place of the old affected animals, and thus we rear a disease-free herd and eliminate tuberculosis."

Dr. Pearson warned the veterinarians against the so-called antitoxin which contains dried or dead organism and which, he said, will not immunize animals against tuberculosis.

Auto for Mail Carriers.—In many parts of the United States of America mail-carriers are using automobiles specially designed for their work. To the rear portion of the vehicle is attached a wooden box, which is divided into apartments for mail to be delivered and mail collected. As a substitute for horses, even in the winter, the automobile has been proved to be a pronounced success.

Changes in Diplomatic Service.

ON Saturday, March 4th, occurred the inauguration of Mr. Roosevelt as President of the United States for four years more. No change is to be made in any one of the Cabinet portfolios, except that Mr. Wynne, who has been serving temporarily as Postmaster-General, is to have the lucrative and important position of Consul-General at London, while Mr. Cortelyou, who left the Cabinet to conduct the Republican national campaign, will return as Postmaster-General. Whitelaw Reid will succeed Hon. Joseph H. Choate as Ambassador to Great Britain. Henry White, who has for nineteen years been first secretary of legation and of embassy at London, will go to Rome as Ambassador.

Mr. Meyer, who has been at Rome for a number of years, will go to St. Petersburg. Mr. McCormick, now Ambassador at St. Petersburg, succeeds General Porter at Paris. Ambassador Tower will be retained at his post at Berlin. Bellamy Storer will remain at his post at Vienna and Mr. Leishmann at Constantinople. Mr. Conger will be transferred from Peking and will become Ambassador to Mexico. The vacancy at Peking will be filled by W. W. Rockhill. Dr. David Jayne Hill, who was for five years Assistant Secretary of State and who is now Minister to Switzerland, will be transferred to The Hague.

Thomas J. O'Brien, a distinguished lawyer, of Grand Rapids, Mich., is to be appointed Minister to Denmark. Henry L. Wilson, now Minister to Chile, will be transferred to Europe and will probably represent us at Brussels. Various other changes will, as a rule, be in the nature of transfers and promotions.

It is pleasing to note that President Roosevelt is taking such an interest in having only the best talent to represent us abroad. The foreign consular service is no longer an available refuge for the disappointed and the unlucky.

Commercial and Industrial Value of the Panama Canal.

THE Panama Canal, when completed, will assist a wide range of industries—agricultural, mineral, lumbering and manufacturing—and will promote the progress of all sections of the country.

As compared with Europe, the United States will derive from the canal greater benefits, both commercially and industrially. An isthmian canal will strengthen the unity of the national and political interests of the United States, develop its Pacific territory and promote the commerce and industries of the entire country. The benefits which Europe will derive from the canal will be commercial. In addition to this, ours will be political and industrial. In time of peace an isthmian canal would afford a short passage for our cruisers from one ocean to the other and would enable the necessary patrol duty of the navy to be more efficiently performed.

In order to learn the advantages that would accrue to American exporters through the practicability of the canal, a committee of the commission visited several cities, whose business interests are largely exports, and the knowledge secured gave the committee something more than statistical or descriptive information. It exhibited the tremendous producing capabilities of the people of the United States and of the large results that will follow the cheapening of transportation by opening a highway for commerce across the Panama isthmus. The committee's final report of the information received from Chicago says: "In the city of Chicago a great variety of manufacturing industries is carried on, and shipments are made to all the countries of the Pacific. The foreign trade of one Chicago firm engaged in the manufacture of mining machinery amounts to 15,000 tons annually. The agricultural machinery manufactured in and about Chicago is now shipped to the west coast of South America, to eastern Siberia, and to various part of Australasia. The Australasian trade of one firm in 1900 amounted to 11,000 tons." The shipments of this firm are made by way of New York.

A Double Locomotive.

ONE of the great railway companies of the United States of America has placed in service a locomotive which is unique. It is, in fact, a pair of locomotives with one boiler. The engine in working order weighs 334,500 pounds, and the weight of the tender, filled with 7,000 gallons of water and 13 tons of coal, is 143,000 pounds. The boiler has the greatest heating surface ever put into a locomotive—5,586 square feet. Of this area 219.4 square feet is in the firebox and 5,366.3 square feet in the tubes, the latter being 21 feet long. These proportions outdo anything of the kind ever before designed for a locomotive. The immense power of the engine may be conceived from the drawbar pull, which is 70,000 pounds, working compound, or 80,000 pounds in simple gear. The boiler will carry a working pressure of 235 pounds.

Locomotives for Australia.—Twenty large locomotives for the Australian Government Railways are now being built by a Philadelphia firm. The engines are of a composite type and may be used for either passenger or freight traffic. The total shipment, which will take up room to the extent of thirty-five hundred tons measurement, will be made in May or June next. The contract which is understood to be worth about $100,000, was obtained in competition with French, English and German manufacturers. The destination of the shipment will be Sydney, New South Wales.

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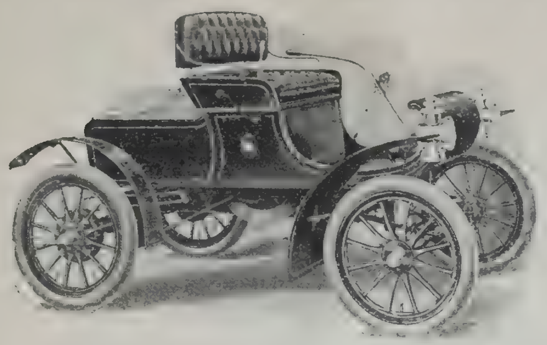

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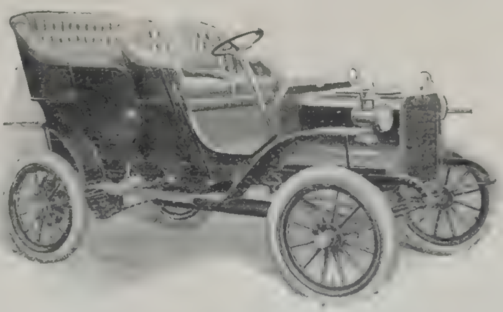

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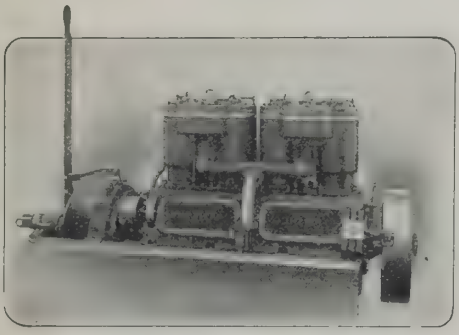

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Steel Trade Conditions.

A REPRESENTATIVE of the United States Steel Corporation is authority for the statement that no matter how pronounced the demand for iron and steel in America the foreign market will not be neglected. The export business of the Steel Corporation, as well as other iron and steel concerns, is said to be satisfactory. One favorable feature of the situation is that the railroads are working in harmony with the steel companies in an effort to encourage foreign shipments. The tariff on steel rails for transport to the Pacific Coast has been reduced and other concessions have been granted from time to time. The demand for wire products in the Far East is becoming more and more pronounced. The last annual report of the United States Steel Corporation gives a good idea of the development of the foreign trade in wire. In 1904 the Corporation shows a heavy increase in the production of wire goods, as compared with the two preceding years. A large part of this increase was the result of shipments to China, Japan and other countries in the Far East. The war between Russia and Japan has checked exports to a degree, and for this reason it is expected that the termination of hostilities will be followed by a pronounced improvement in the demand from Far Eastern sources.

Not in the history of the United States has the iron and steel industry rested on such a secure foundation. Production of pig iron exceeds all previous high records, and receipts of iron ore from the lake districts this year are expected to exceed the tonnage of 1903. America is now producing at the rate of 21,000,000 tons of pig iron a year. Not in history has pig iron production exceeded 18,500,000 tons in a single year. Shipments of iron are expected to reach 30,000,000 tons, or several million tons in excess of the highest level ever reached. Notwithstanding the abnormal demand for iron and steel that has set in, the Steel Corporation and other steel concerns have so far been able to prevent prices from reaching an exorbitant level. Quotations are considerably lower than they were in the boom periods of 1902 and 1903, and it is believed that the situation is well in hand, and that a runaway market can be avoided. Consumers appear to be satisfied with prevailing prices, and producers are doing all in their power to hold quotations at a reasonable level.

As is generally known, the iron and steel business is subject to sudden changes, and, consequently, it would be unsafe to make predictions as to the possible extent of the period of prosperity through which the industry is now passing. One thing, however, is certain—the unfilled tonnage on the books of the United States Steel Corporation and other concerns indicates that there will be no setback this year. The unfilled business on the books of the Steel Corporation is in the neighborhood of 6,000,000 tons, or about 2,000,000 tons less than its normal yearly capacity. The company could add to its tonnage, but it is pledged to make deliveries on the contracts it now holds on specified time, and consequently does not see its way clear to add to its unfilled tonnage.

It is estimated that American railroads will purchase something like $200,000,000 of new equipment this year—a figure that represents 33 per cent. of the annual gross business of the United States Steel Corporation.

With increased tonnage and higher prices the various steel companies are expected to make most favorable showings, from the viewpoint of earnings this year. It is estimated that the net earnings of the United States Steel Corporation this year will be in the neighborhood of $125,000,000, or something like $45,000,000 in excess of the earnings in 1904. Charles M. Schwab is very optimistic. He believes that if there is no setback the earnings of the Steel Corporation in 1906 will break all records. In an official statement made two years ago Mr. Schwab gave the value of the visible iron and ore supplies of the Steel Corporation as $1 a ton, or $700,000,000. He now figures the properties at a much higher price and says they will increase in value in proportion to the increase in the consumption of iron and steel.

A Visible Telephone Call.

THE genius for invention is surely a highly developed trait in the American mechanic, and devices that have saved both time and money have been evolved by workmen after scientists had worked in vain on the subject. One of the latest inventions is a visible telephone signal that successfully replaces the familiar call bell. It is installed in a steel mill, where eighteen boilers were in use and where the occasional blowing off of steam from one or more of them made it impossible for the modest little call bell to be heard.

What is the use of a telephone bell if there is so much noise in its vicinity that you cannot hear it, was the abstruse problem that confronted the owner. The telephone was depended on in case of a fire in the town, the boiler-house whistle being blown, upon notification, and it seemed necessary to have some means of insuring that the telephone be answered.

The electrical engineer of the company was appealed to and gave it up, whereupon the boiler-house foreman went ahead and worked out a scheme as follows:

He reasoned that no noise short of dropping the roof would be of much use, and decided that one or more lights would be best. The interior of this boiler-house is rather dark, so he placed several lamps in likely places, using 16-candle-power red incandescents, and connected all to the same pair of wires. He ran these down to the telephone and there installed an automatic device. It was a combination of a switch, to turn the current on to his lights a lever to operate it and a heavy block of wood to pull the lever. To the weight was secured a small loop of wire. This hook he slipped over the clapper of the bell, balancing it neatly. When the bell rings the hook slips off, the weight falls and the switch throws on his red lights. Then he knows some one wants him and calls up central.

America Has Fastest Railroad Trains.

THE greatest speed attained by railroad trains in both Europe and America has been a subject of considerable discussion, and it has been contended that the greatest speed has been made in Germany. W. A. Schulze, by a comparison of official reports, has endeavored to show that the service of German is superior to that of American roads. On the other hand, George H. Daniels, the well-known general passenger agent of the New York Central Railway, declares that the service is better in America.

Mr. Daniels had this to say: "One thing, and a very important factor not generally recognized in disputes about the fastest trains, is that the Americans are seriously hampered by the necessary slowing up at grade crossings, and that our people do not observe or have laws saving them from danger and giving the trains the right of the road. In Europe if a man walks on the railroad track he is arrested and heavily punished. Here if he walks on the tracks the railroads have to pay for his supposed value. Even with these handicaps we still beat them.

"The Empire State Express of the New York Central and Hudson River Railroad has been in service since October 26, 1891. It makes the run from New York to Buffalo, 440 miles, in 8 hours and 15 minutes. The average speed, including four stops, two of them being made with a change of engines and with twenty-eight slow-downs for crossings, is 49.303 miles an hour. In certain places the speed is terrific, varying from 73.44 miles to 86.58 miles per hour.

"One reason why these remarkable speeds can be made with safety is because of the great weight of the engines and the cars. It is interesting to note the difference with the fliers in European countries. On our train the weight of the cars is 277 tons, locomotive 150 tons, the total being 427 tons. The average number of passengers carried each day is 400. Of the fast ones abroad the Southern Express, leaving Paris by way of the Orleans Railway for Bayonne, makes the distance of 488.01 miles in the running time of 9 hours and 54 minutes, the average speed being 49.303 miles an hour. The weight of the cars is but 110 tons. This is the principal train between France and Spain, and on an ordinary trip does not carry over forty passengers. This Southern Express was for a while the fastest train in the world. At that time it completed its run in a little less than eight hours, the average speed, involving stops, being 54 miles an hour. About two years ago this express, owing to the lightness of the cars, met with a fearful accident, and the time was reduced for safety to the figures I have given. Similar accidents on English roads caused slower time.

"The East Coast Express of the Great Northern and Northwestern Railways running from London to Edinburgh, a distance of 393½ miles, makes the journey in 7 hours and 45 minutes, the average speed per hour being 50.77 miles. The West Coast Express, via the London and Northwestern and the Caledonian Railways, runs from London to Glasgow, a distance of 401½ miles in eight hours, at an average speed of 50.18 miles an hour. In England one of the fastest engines is known as La France. She was built in France for the Great Western and has a record of 84.9 miles an hour on the dead level, without any aid from gravitation, while drawing a 120-ton train, but her long-distance pulls do not equal some of the special speed trains. The fastest trains in the world are run over American railroads."

George C. Tunell made the following statement on the subject: "Distance affects speed in at least two ways. Travel between remote points is not so heavy as between near-by points of equal importance, and therefore there is not the same demand or reward for high speed. Long stretches of track, devoid of sharp curves, free from mountain ranges to be climbed, wide rivers to be crossed, often ferried, and large cities, which must be slowly traversed, are rare, and it is therefore generally much more difficult, from the physical point of view, to maintain a high speed over a great distance. It is noted that as the distances increase the average speed usually diminishes, especially when the trains of any country which may be selected, are contrasted with one another.

"In ranking trains, although it has not been customary so to regard it, journey speed should be deemed of greater importance than running speed. In the tables that Mr. Schulze introduced in support of his contention that the train service of Germany is better than the United States he gave what he declared to be the running speed of but forty-three American trains and that of but forty-six German trains. The very fastest trains in America, those between Camden and Atlantic City, N. J., are not included in Mr. Schulze's comparisons."

To Build Mammoth Sugar Mill.—The Nipe Bay Company, of Boston, are making preparations to build on their extensive sugar plantation in Cuba an immense sugar mill. It will have a capacity of 4,000 bags per day, which is 300 bags in excess of the capacity of the next largest mill, which is located in the Hawaiian Islands. The Nipe Bay Company will operate on 555,000 acres of land this season, and is now clearing an additional 14,000 acres for cane to be planted next year. A railroad is to be built from the mill to Nipe Bay, where immense piers were recently completed by the Van Horne syndicate.

Canada's Commerce Expands.—The record of the trade and commerce of Canada, as shown by the report recently presented to the Dominion Parliament, is one of remarkable growth. The increase in trade for the past year aggregates about $230,000,000. The total exports for 1904 were $211,055,678. The exports of Canada's agricultural and animal products were valued at $100,951,000, of which Great Britain took 90 per cent.

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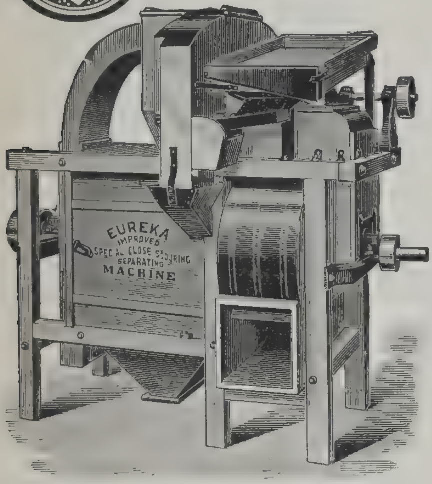
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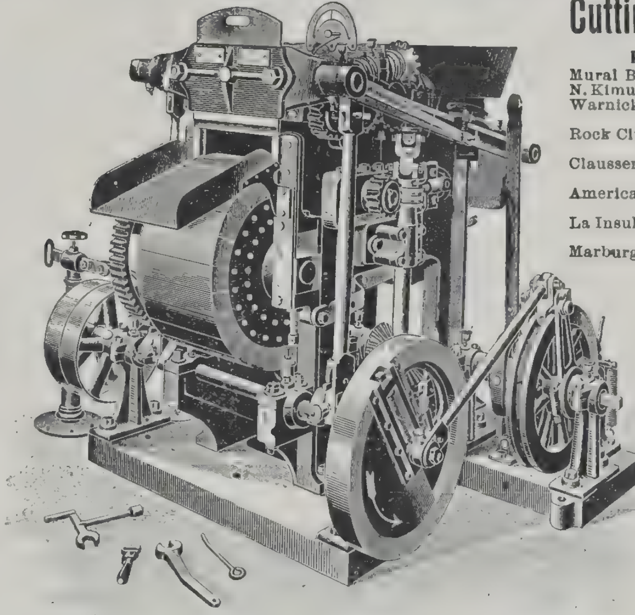

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Weight of the above four Washing Machines, 250 pounds.

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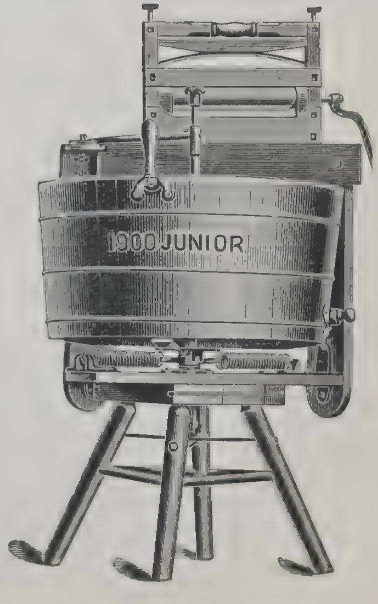

The "1900" Washer Company,

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Wagons and Carriages.

AMONG the products of American manufactories none stand more conspicuously prominent for their perfection in workmanship and adaptability for the uses for which they are designed than our wheeled vehicles. This fact is due to several causes, prominent among which is the great diversity of the uses to which vehicles are put in this country, covering all kinds of purposes for business and pleasure, and being required to suit the varied tastes of a community covering a wide expanse of territory, thereby calling into requisition extraordinary skill in workmanship and special care in the selection of material. It will be convenient to divide American vehicles into two classes, those designed for pleasure and light business purposes and those designed for freight and heavy transportation.

First in importance in the latter class is the farm wagon—a vehicle almost as distinctive in its type as the light road wagon. It had its origin when cheapness of construction was an absolute necessity, and when one vehicle had to suffice for all uses; and so well was it adapted to the purposes for which it was designed that amid all the changes made in vehicles its primitive features have been maintained intact, and such improvements as have been made have been confined to minor details of construction and to the perfecting of axles so as to insure lightness of draft. As now constructed, it stands as the simplest and most perfect vehicle in the world for farm and general domestic transportation uses.

To insure unifority a perfect system of sizes has been introduced, based upon the size of the axle arm at the shoulder. Thus No. 1 has a skein or arm 2½ inches at the shoulder and 8 inches long, and a tire 1¼ by 7-16 inches, the weight being 660 pounds and the approximate carrying capacity 1,200 pounds. A No. 6 has a skein or arm 3¾ by 12 inches and a tire 1¾ by ¾ inches, the weight being 1,280 pounds, and the carrying capacity 5,000 pounds. All the intermediate numbers are alike graduated as to sizes, weights, etc.

Three styles of axles are used—wood with strip skeins, wood with "thimble" or tubular skeins and iron axles with wood beds. All other parts are of wood, with no more iron than is absolutely necessary to combine the different parts, less iron being used than on any other vehicle of like strength and bearing capacity. This result has been obtained by care and skill in proportioning and adjusting the various parts and by the use of the most perfect machinery, by which absolute accuracy is obtained, particularly in the construction of the axles and skeins and the setting of the boxes in the hubs, by which lightness of draft is insured.

Then, too, the American builder has at his command timbers that are specially valuable for this class of vehicles. For spokes and rims he has as fine a quality of oak as grows and for hub elm and oak of superior quality. For axles he has oak, hickory and hard maple, the latter being one of the most rigid timbers known, its value for use where support is required being 25 per cent. greater than that of American oak and 45 per cent. greater than that of English oak, while its specific gravity is lighter than either. For the lighter portions of the gear he has rock elm and ash and for the body panels poplar, better known as whitewood, a soft wood that is unsurpassed for strength and durability. It retains its form under the most adverse influences from heat and cold, and holds paint so well that it is easily protected against extreme moisture.

The American manufacturer has given much attention to the seasoning of the timber. He seeks to drive out the watery portions of the sap, while retaining and solidifying the glutinous properties, thus preserving the strength of the fiber and leaving the wood seasoned, but not dried out, in which condition it retains its full strength and is less easily affected by climatic changes than when air or kiln dried—a consideration that should not be overlooked, as it, more than any other one condition, influences the durability of the vehicle.

Another feature is the careful manner in which the American wagon is put together. The builder recognizes the advantage of good material; but he is also conscious of the fact that the strength of the whole does not depend solely upon the quality of the material used, nor the size of each individual piece, but rather upon the perfect combination of the various parts in correct proportions and the putting of them together in such a manner as will secure the full strength of each without an undue strain upon the other. To insure this the most perfect machinery is used and is worked by careful and painstaking men, and so correct is the working that every individual piece is in duplicate. The ironwork is fitted with the utmost accuracy, and so perfect are all the parts that a score of wagons could be taken apart and readjusted without the slightest regard as to which were the original pieces.

With all vehicles lightness of draft is a leading essential, and in this respect the American farm wagon is a model, and wherever competitive tests have been made it has in every instance defeated its foreign competitor. More than any other vehicle it meets all the requirements of the agriculturist, and wherever placed it has become the model farm wagon, and its gear has been adopted as the most desirable for government purposes by other countries. Its neat and durable finish recommends it, while the numerous appliances which fit it for specific purposes commend it for use in all parts of the world where light transportation is demanded.

Under the general term "pleasure carriages" may be grouped all vehicles used for passenger traffic, private or public. In this class are assembled hundreds of varieties, from the single-seat two-wheeler to the coach for twelve or more passengers. Some of these are solely for pleasure purposes; others answer the double purpose of pleasure and light business vehicles, and in no country in the world, nor in all the countries combined, is the variety so great or the construction so practical. This one fact of itself makes this country the heart of the carriage trade, as here can be procured vehicles suited for every purpose and adapted to every climate, from the severely plain and simple to the most elaborate and intricate.

To have claimed that in this line the American vehicle was superior to that made in other countries would have been looked upon a few years ago as the prating of a self-opinionated driveller. To-day no man who has the slightest knowledge of the construction of the American carriage would venture to dispute the assertion.

Until within the last quarter of a century the American builder of heavy pleasure vehicles felt himself dependent upon the foreign artisan for designs and methods of construction, and few had the courage to assert that even with all the aids thus secured their work was equal to that turned out in foreign workshops. But all this is changed; the American builder is now entirely independent of the foreign competitor, and instead of following in the wake he now leads, and the strongest houses abroad are those that are using American materials and have adopted American methods. We are no longer dependent upon Europe for designs, but the entire carriage world is watching this country and looking to our artisans for designs and improvements in mechanical execution.

The perfection to which carriage building has attained in this country is but a natural result arising from sharp competition between manufacturers, owing to the demands made upon them by customers, which stimulate the draughtsman to a higher grade of art and the mechanic to the execution of more perfect work. The high rate of wages has attracted the best workmen from abroad and stimulated our native mechanics, and, as a counterbalance to the increased expenses arising from the employment of the most skilful workmen, machinery of the most perfect character has been introduced, by which manual labor is diminished and the cost of production reduced.

While this condition was operating here Europe was adopting a different course—namely, reducing the cost of construction by lowering the grade of labor and using inferior materials, and so marked has this become that with few exceptions the first-class vehicles built abroad compare unfavorably with the second-class American carriages built for hack purposes. Thus, while American builders were improving their product and reducing the cost foreign builders were striving to compete in price by degrading the quality, and so, with but few exceptions, the vehicles made abroad are inferior to those produced here.

If we seek for further reasons why the American vehicle is better than the foreign-made vehicle we can begin by examining the timber used. In this respect our manufacturers are favored above all others. First among the timbers is hickory, which has no equal for that part of carriage work calling for great strength and elasticity and a minimum of weight. The peculiarities of this wood are so well known by our manufacturers that they never make a mistake in using it, confining its use to carriage parts and medium and light wheels. Then we have elm, birch, locust and oak for hubs, each in its proper place unsurpassed. Then there is the second growth white ash, a timber that has no equal for coach carriage parts and other uses where strength must be secured without unduly increasing the weight.

For body timber there is the American forest ash, a wonderful wood for specific uses, such as the hardwood framework of a body. It is fine-grained and solid, possessing great strength in comparison with its weight, seasons well and does not easily lose its form, and as it takes paint well it is easily protected from injurious climatic effects. There is no wood known that at all approximates to it for the framework of vehicle bodies. For panels we have the American poplar, which takes glue and paint freely and withstands the changes incident to heat, cold and moisture. It is very light, and even when reduced to the thickness required for panels it retains its good qualities, and in conjunction with forest ash forms a duo that has no equal for this specific purpose. Then there are cherry and black walnut, two valuable semi-hardwoods that are extensively employed where solid panels are used, and also for glass and other frames. For poles and other heavy pieces we have prime white oak and the tough, rigid red oak—timbers that never fail.

We have been thus specific in regard to the woods, because of their importance and because they are all products of American forests. The carriage-builders of all other countries have but a limited number of native woods which they can use to advantage and are compelled to procure from other regions the necessary woods to complete their list.

The ironwork of American carriages has long been a matter of pride. Even when it was less artistic than the French it was correctly formed and perfectly fitted to the wood—the latter a feature that is too often slighted in foreign work. Recent improvements in drop forgings for carriage work have brought these to such a degree of perfection that the most complex forms are forged, with the grain of the iron running in the direction of the length and without welds. These forgings are so smooth that the finisher's file is never used except to remove burrs, and they are made at a cost but little in advance of malleable castings, though of the finest brands of iron and steel.

Another element that has entered largely into the perfection of the American carriage is the use of a great variety of devices—the inventions of our mechanics. These have improved the appearance of the vehicle, decreased friction and thereby increased the durability, made the vehicles more comfortable and cheapened the cost to the manufacturer. And last but by no means least, the American builder has learned how to print so as to protect the wood, and, by producing a fine surface, to secure a mirror-like finish that it at once durable and artistic, and which develops the color and varnish in all its richness and luster.

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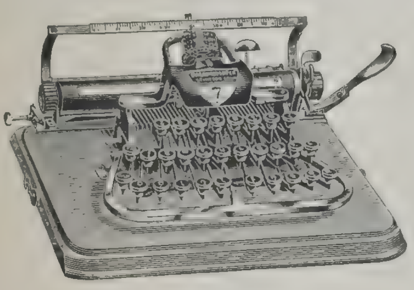

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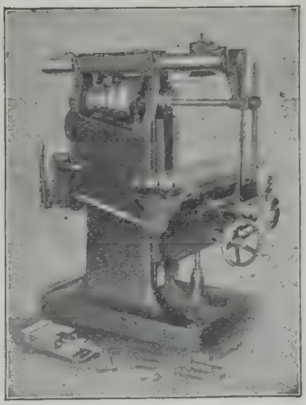

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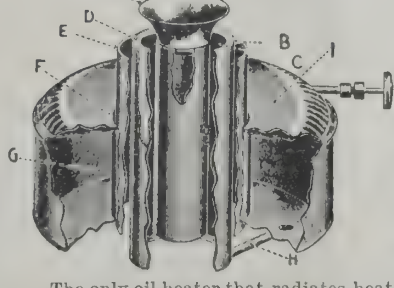

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America Sets the Automobile Pace.

H. P. BURCHELL, in an article under this title, published in a recent issue of *Outing*, states that the value of American automobiles exported during the past year amounts to something over $2,000,000, which was more than the British exports of such machines during the same period. Here is what he says on this subject:

"A still more convincing contrast appears in the value of foreign cars brought into these two countries. English automobilists imported machines worth over $8,000,000, while in our own land the importations aggregate barely $2,000,000. The high duty undoubtedly contributes toward reducing the influx of foreign vehicles in America, but none the less, the figures clearly show that the English-made cars do not satisfy the demand, while the contrary is eminently true of those of American manufacture.

"Some idea of the magnitude of automobile manufacture in this country, and the increasing popularity in motoring for pleasure, may be had when it is stated that in 1899 only fifty motor cars were owned in America, while at the present time the individual owners number fully 70,000.

"The small car—that of moderate horse-power—has always been characteristic of American manufacture. Foreign critics, and particularly those from France, have occasionally condemned America's so-called lack of progress in not branching out more effectually into the higher-powered machines—those that may properly be termed racing cars. In this respect America has been behind France and Germany, but a marked change is now taking place, for, thanks to the stimulus given by the Vanderbilt cup race last year (1904), many leading American manufacturers are now devoting more attention to the design of powerful machines for racing purposes. There is hardly any possibility, however, that this movement will reach the extreme seen in France. It is, too, a curious coincidence that at this very time the entire automobile world should be turning to the very type of car that has been so characteristic of American manufacture. In other words, the car of the future, from present indications, seems to lie in those types possessing from 20 to 35 horse-power. The excessive demand for cars, averaging close to 100 horse-power, is practically over, except for racing. Even with the race purpose in view, America has conclusively shown that with cars from 20 to 24 horse-power, practically as good results may be obtained in speed, as has been popularly credited to the big cars alone for so many years.

"Thery, the Gordon Bennett cup winner last year, voiced this sentiment for moderate-powered cars while on his visit to America. 'The popular car in France,' he said, 'during the coming year will be the 30 to 35 horse-power vehicle. The heavier cars—from 60 to 100 horse-power—are too big for general touring. Their complicated mechanism requires the most careful attention, and only on smooth, long stretches of road can those high-powered cars be used with complete satisfaction. For private ownership the demand for these racing and semi-racing machines has been overdone and a sharp reaction is setting in. Smaller but absolutely reliable cars containing, if possible, less complicated machinery, are what the public is asking for now.'

"Several large foreign manufacturers have announced that their entire output during 1905 will be moderate-powered cars. In America this tendency will not be noticed so sharply because practically all of the monsters in motoring have been of foreign make. The marked success in one of the closing track races last season of an American 20-horse-power car, in defeating two of the most powerful and successful foreign cars owned here—one of 60 and the other of 90 horse-power—and the success of the 24-horse-power American car in the Vanderbilt race, was a revelation of the possibilities of the moderate-powered car. The 20-horse-power car weighed but 800 pounds, yet showed a track speed of fifty-five seconds for a mile, which is but a fraction higher than the world's track record for the high-powered cars.

"Touring has become a popular and delightful pastime, yet it is only in its infancy. Hundreds of owners have traveled thousands of miles over good, bad and indifferent roads without advertising the fact from the house-tops or in the columns of a progressive trade paper. The cars of moderate horse-power are most serviceable for this purpose. With a 25 to 35 horse-power vehicle the occupants have every reasonable assurance that the car will take them on their journey at a comfortable rate of speed and will go up-hill at a pretty lively clip. The American automobilist dearly loves a car that will go up-hill without acting as though it wanted to stop, like a wheezing hack horse, at every mound, to gather breath for the next stage in the ascent. A car of the horse-power as indicated may always be relied upon to climb hills at a fair rate of speed, and on good stretches of road it will not be obliged to take the dust of many passing machines.

"To how great an extent the national individualities of automobiles may be recognized was strikingly illustrated a short time ago by the purchase in this country of a car for use in Turkey. The purchaser of the car, a young Turk who had been educated here, was asked why he bought here instead of in Paris, as he could obtain equally as good a car there and incur less expense in shipping. His answer was that a car made for use on American roads would be far more serviceable in his own country than a French car built chiefly for speed, as the latter sets too low on the ground for satisfactory use on ordinary and sometimes very bad roads. The heavier French machines are swung much lower to the road than the majority of American cars, which permits greater speed, and it facilitates roundings of corners at a fast pace. The lower the frame of a car is to the road the less danger there is that it will topple over. Thery, when asked if the outside wheels of his car did not leave the ground while taking the corners at fast speed in the Gordon Bennett race, denied that such a thing was possible with the best French touring cars to-day.

"India, toward the close of last year, made a commendable effort to ascertain the type of cars best suited for use in that country. An 800-mile reliability run extending over eight days was held, the purpose being to stimulate the use of automobiles for official and business purposes and to learn what styles of cars would give the greatest satisfaction on the native roads.

"The Vanderbilt Cup race was a great boon for American automobiles. It brought to this country some of the highest-skilled, best-racing men of Europe, besides other careful investigators, and it gave the foreign representatives a clearer idea of the magnitude of the motor car industry here.

"America's prestige abroad previous to the Vanderbilt Cup race last season had not been very high, due to the poor showing made in international events. Consequently, America's ability to turn out not only racing cars, but substantial cars of general use, was viewed with discredit. From that fact arose the lack of seriousness that characterized the Vanderbilt race announcements until close to the time that the event was to be held. Then several prominent French racing automobilists arose to the occasion and came over, but others of practically equal merit remained at home. The success of the race and the high-class cars that were entered surprised the foreigners. Here, then, was something worth looking at, if not only for racing glory, at least for the cause of French prestige, and therefore the prediction has been made from their own country that when the second Vanderbilt Cup race comes off nearly every prominent racer in France will be on hand.

"In the training of experienced chauffeurs by means of well-established schools, America is setting an influence that will undoubtedly be followed more generally in a short space of time. A chauffeur needs to be a skilled mechanic in many respects, and Sir Alfred Harmsworth was quite right when he criticized the folly of Americans in employing so many foreign automobile drivers, regardless of their ability, but simply because they came from a land where the motor car industry holds a superior position. Owners of vehicles themselves are acquiring a better knowledge of the mysteries of motors, engines and cylinders, and this naturally leads to the demand for highly experienced drivers of cars. There is a steady and commendable growth in all lines of automobilism, and while no one wishes America to reach the insane craze for speed at any cost, which until recently was characteristic of France, none the less national indorsement will follow upon America taking a higher place in the world of automobile activity, where her influence for reliable cars will reflect beneficially upon makers and users."

American Axes.

THE statement, which has occurred in contemporary English trade journals, that American axes are inferior to those of English manufacturers, because the latter are made of solid steel, while the former are partly iron and, therefore, more quickly dulled, is not only incorrect, but absurd. American axes have been the best in the world ever since American ingenuity devised the curved handle to take the place of the old, inconvenient straight handle.

It would be of no advantage whatever, and decidedly wasteful, to make an ax of expensive tool steel throughout. In few instances will an ax be ground down more than 1 or 2 inches from the original edge of the blade. That much is made of the finest tool steel. As a matter of fact, axes are not made of tempered steel in any country. The heads are usually made of soft steel, and the bits, of high crucible steel, are welded on under the hammer and form the cutting edge. The process in America is about as follows:

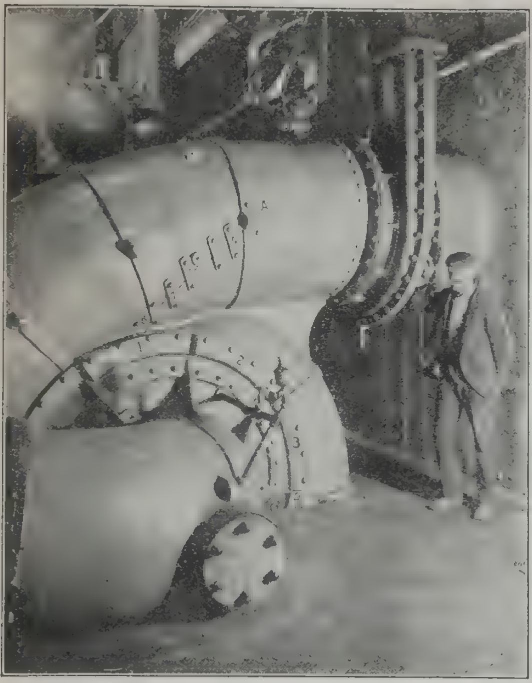
Long bars of soft steel are cut into suitable lengths by powerful shears. These short pieces are then made white hot. They are next placed on the feeding-bar of a machine, which by a single downward stroke bends the bar into a U shape, and by a horizontal stroke fastens the wedge-shaped bit in place, welding the whole into one piece, but leaving an opening for the handle. The ax is then reheated and is shaped and finished under a drop hammer. It is then, in turn, tempered, ground, polished and decorated. The special machinery employed, the high speed at which it is run and the intelligent workman, combine to make an ax that is excellent in quality and moderate in price.

One needs no better proof of the superiority of the American-made axes than the well-known fact that they lead in the various markets of the world, including the English colonies and the Continent. It may be said, however, that Canada manufactures its own axes. The protective duty there renders it impossible for manufacturers outside the Dominion to compete. The excellence of the American ax is acknowledged in almost every number of the English trade journals and can be due to but one thing—the inherent superiority of the American-made product.

American Fruits in France.

THE United States commercial agent at Limoges, France, in his annual report for 1904, has the following paragraph on American fruits in that country:

Within fifteen years the importation of canned dried and preserved fruits into this part of France has doubled. California pears, plums, apricots and peaches are found in every grocery store, and dried fruits of every variety, of better quality than the domestic product, are sold throughout France generally. However, there is still an opening for a large increase in this business, and if the French market is properly approached sales could be doubled.



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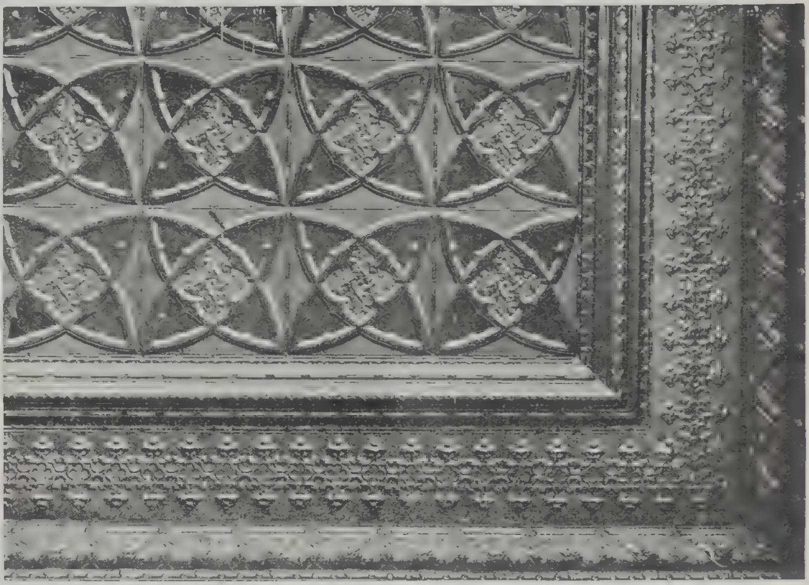

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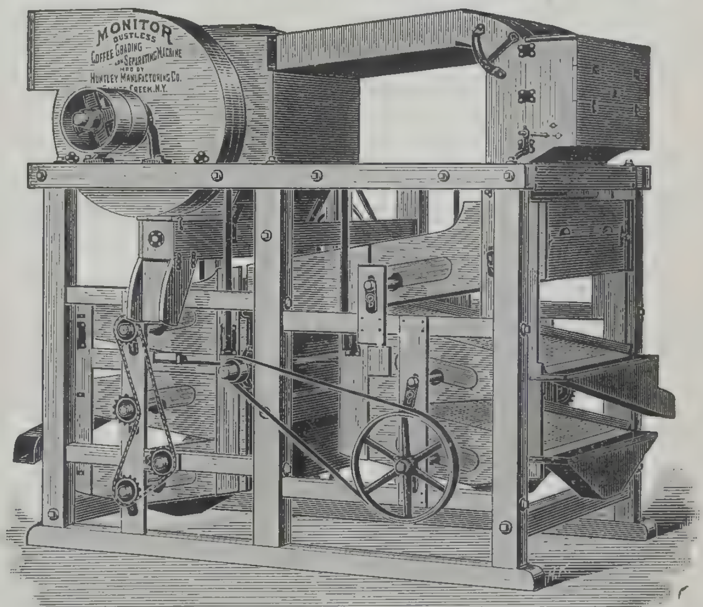
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Moving Platforms.

WHILE the great subway in the city of New York has been in operation a few months only, plans looking to an increase in its facilities for carrying the immense passenger traffic are already under consideration. One of these is called the moving platform, which is really several platforms all moving at the same time, but at different rates of speed. There are to be four distinct platforms moving in both directions. On entering the new subway, which will be done by means of escalators, the traveler will land on a stationary platform.

Running by this like the wash of a brook against its shores will be a platform 2 feet wide going at the rate of three miles an hour. Within this will be another platform of the same width, moving at the rate of six miles an hour, and just beyond this the main platform, going at the rate of nine miles an hour. This platform will be 6 feet wide, and, unlike the smaller platforms, will be fitted with cross seats, each capable of accommodating four persons, room being left on the outer side for a runway. The stationary platform will also be so arranged that it can be turned into a moving platform for use at night or at times when any accident befalls the regular moving platforms. The mechanism of the system is so simple, however, that no serious breakdowns are looked for. The wheels producing the motion will be fixed at regular distances beneath the platform, which will roll over them like a belt over a pulley. The estimated cost of the system will be $5,000,000, and it is asserted that when in full operation it can accommodate 75,000 persons an hour.

Estimates show that the capacity of the four-track section of the subway, with eight-car express trains, running at two-minute intervals, and five-car locals, running at one-minute intervals, is 28,080 seated passengers an hour, going in one direction. In comparison with this the figures show that the moving platform will deliver at a given point 47,500 seated passengers an hour, its capacity being about 70 per cent. greater than the maximum of the subway, which has not yet been attained in actual operation.

The popular idea that a steel platform several miles long will cause an immense loss of power through friction when in operation is also disproved by the figures. They show that, while 10 kilowatts at the power house will move ten seated passengers in the subway and sixteen seated passengers on the elevated roads, they will move 260 seated passengers on the moving platform. In other words, one horse-power hour will be needed in the operation of the platform system to do work that would consume eight horse-power hours for the elevated and thirteen for the subway.

The dead weight to the seat to be moved in the operation of the elevated is 790 pounds, and in the subway 1,251 pounds. In the moving platform, with equal strength, and, it is said, greater safety, the dead weight to the seat is only 437 pounds. These figures show at a glance a great economy of power. It is declared that in train movement two-thirds of the power is lost at the brakes. This loss is, of course, done away with in the moving platform, where there is neither stopping nor starting.

All noise and jar in the operation of the platform are to be done away with by the use of rubber-cushioned wheels. It is said that there will be no danger of falling on the platforms, and that there is no way in which a person can get caught in the mechanism.

Grain Threshers.

LABOR-SAVING machinery is the crowning glory of American inventive genius and enterprise. It has made the United States a nation of prosperous, self-respecting, sovereign freemen, and it can do the same for any other community of people in the world if they will follow the example and make use of the means employed by the people of America. In no other department has the beneficial influence of America labor-saving machinery been greater than in agriculture. Within fifty years it has transformed a boundless wilderness into a broad expanse of fertile farms—the home of 60,000,000 people and the granary of the world. Without the aid of this machinery the people of this country would still be toiling in the field with primitive manual tools, after the manner of their forefathers, and the Western frontier would still be on this side of the Mississippi River. The wonderful contrast between the civilization of to-day and that of the early part of the nineteenth century can be truthfully and eloquently epitomized by placing side by side a modern threshing-machine and an old-fashioned flail.

Among the chief of our American improved agricultural machines stands the threshing-machine. When one sees these machines in operation on a Western farm, the wonder ceases in regard to the ability of our farmers to harvest and market the almost incredibly large crops which come East in thousands of cars and afterward shipped in hundreds of vessels every autumn. Without the aid of these large power threshers it would be simply an impossibility to secure and move these crops. It would be of no use for the farmers to acquire and cultivate the immense estates that are the pride of the West. They would not have time to gather together what the fertile soil and labor produces. It needs, however, no argument to prove the great utility of threshing-machines, and all agricultural communities are learning to take advantage of them. The present purpose is rather to point out to foreign readers the peculiar excellences of the American machines and their general superiority over threshers of foreign manufacture.

1. EFFICIENCY.—In threshing two objects are especially aimed at—to separate the grain from the straw without injuring it, and to perform the operation as rapidly as possible. In regard to both these objects the American machines are greatly superior to those of foreign make, as is readily seen by any one who compares the results obtained and as is testified to by countless users of the two kinds of threshers. The American methods of threshing grain out of the heads by machinery are different from the foreign methods. By the American methods, as put into operation in our threshers, the grain is more thoroughly separated from the straw, and the straw comes out of the machine in better condition than by the foreign methods and a much larger percentage of grain is saved—in fact, it is practically all saved—while most foreign threshers will lose a considerable percentage of it. Besides this all the grain comes out of the American threshing-machines perfectly clean and unbroken, which is not the case with foreign-made threshers. The grain going through the latter must, in many cases, be cleaned over again by other processes in order to fit it for the markets of the world.

As to rapidity, it is a matter of record that an American thresher will do from twice to ten times the amount of work in a given time that a foreign-made machine will do; and even at their slow rate the foreign threshers neither separate nor clean equal to the American machines, as shown above. The American manufacturers have hundreds of testimonials to this effect from farmers in other countries, who are disinterested and impartial witnesses. Our readers may remember a letter recently published by us from a prominent Mexican farmer, who testified that with an American machine he had threshed 150 cargas of fourteen arrobas (or 350 pounds) each in ten hours, while in the same time an English machine had threshed only sixty cargas, and the quality of the work done by the American machine was much the better of the two. This is but one case among thousands.

2. ECONOMY.—The foreign threshing-machines are large, heavy, cumbersome and complicated, and the great amount of unnecessary material in them makes them cost more than the American product—often twice or three times as much more. Being much heavier and harder to operate the foreign machines require greater motive power and a larger force of operatives than does the American. All this makes them much more expensive, even without taking into consideration the additional economy of the American machines in the better results produced in the way of clean threshing. At a recent trial of English and American threshers in Mexico the American machine threshed just twice as much wheat in a given time as did the English machine. The latter weighed 12,000 pounds and was operated by a 30-horse-power engine, while the American thresher weighed 6,800 pounds and was worked by a 16-horse-power engine. SUCH FIGURES TALK.

3. CONVENIENCE.—It is apparent, from what has been presented under the second head, how much more convenient the American machines are in practical use and handling than those of foreign make. They are also found much more convenient in another way—namely, in respect to the ease with which they are repaired and kept in order. In this respect they share the enviable reputation enjoyed by American machinery in general.

4. SOLIDITY.—Although lighter than the foreign-made machines the American threshers are built more solidly, work more reliably and last longer. In this respect there is really no comparison between the threshing-machines manufactured in the United States and those built in any other country. In the first place the material of which they are constructed is, as a rule, far superior to that of foreign manufacture. Our improved methods in this country for manufacturing steel shafting by the cold-rolled process give us for this kind of machinery shafting of truer diameter and better finish and more accurately made than the shafting used by our foreign competitors.

It is generally the case that their shafting is all turned where it is finished up smoothly at all, and that a great deal of it is used in a rough shape with simply the journals being turned up. For example, at Youngstown, O., not long ago a piece of foreign agricultural machinery was subjected to examination and caused a great deal of surprise among practical machinists on account of its poor condition and general inferiority, while, for the purpose for which it was intended, it should have been of the highest type of finish. The shafts were rough and unfinished, a worm gear on one of the shafts was of the crudest description and the workmanship throughout was of a nature that would not be allowed in any shop in this country, and an apprentice that could not do better work would not be permitted to remain in an American shop. Not only in the metal parts, but also in the woodwork, the American machines are vastly superior to their foreign competitors. This is because of the better quality of our American woods, originally, and also because our lumber, as is well known, is always seasoned better than lumber can possibly be seasoned in any other climate. For this reason the framework and all wooden parts of our threshers are exceptionally strong and solid. They will wear in any climate without warping or cracking for an indefinite length of time, whereas machines containing wood seasoned in European countries soon become rickety and unsound.

5. ADAPTABILITY.—American manufacturers of threshing-machines study the wants of customers, of whatever nationality, and strive to construct machines that will be not only effective, simple and lasting, but will also satisfy all peculiar local demands. There is no question but that American manufacturers have a great advantage, proceeding from the diversity of our own climate, which creates a corresponding diversity in the kinds of grain grown in this country, and thus compels the building of machines that will do good work under all circumstances and conditions, in every climate. That this result has been attained has been proved again and again with entire satisfaction to our manufacturers in connection with the foreign trade. They have found that after their machinery has once become introduced anywhere and the prejudices of foreign buyers against American machines be removed they have had no difficulty in holding the trade and selling all the machines in foreign markets that they can manufacture.

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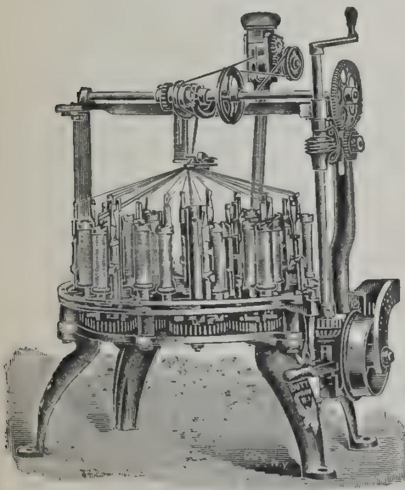

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Why the Subway Strike Failed.

THE city of New York has recently witnessed a strike which seems likely to exert an important influence upon organized labor in the United States. Several thousand men employed upon the new subway and the elevated railroads of the city stopped work on the refusal of their employers to make certain concessions as to wages and hours of labor. The strike was ordered by local leaders against the advice of the officers of a national organization to which they belonged, and, it is believed, against the real wishes of a majority of the men immediately concerned.

The strike, coming in extremely cold weather, caused widespread distress. Two of the most important systems of communication in a city of more than 3,000,000 inhabitants were temporarily paralyzed. Hundreds of thousands of wage-earners were exposed to discomfort and hardship in getting to and from their places of employment, and many thousands lost one or more days' pay because they could not get to work at all. Train service on both systems was almost suspended for several days, travel was uncertain and extremely dangerous, while business throughout the city was seriously obstructed in consequence.

Under these conditions it is not strange that the severest condemnation of the strike came from the great body of wage-earners, many of whom belonged to other labor organizations. They were its principal victims. It not only exposed them to keen distress, but struck a blow at their pocketbooks, by forcing them into temporary idleness in midwinter. Naturally they not only refused to sympathize with the strike or support it morally or financially, but openly denounced and opposed it.

Through it they came to realize more keenly, perhaps, than ever before the oppression and injustice of trades unionism, when controlled by selfish and irresponsible leaders.

In dealing with this strike the managers of the corporations involved resorted to what is known in the United States as "strike-breaking." Fifteen hundred or 2,000 men of more or less experience on electric railways were brought into the city from other parts of the country to take the place of the strikers. The newcomers were under the control of a shrewd leader, who makes a business of providing men to meet such emergencies. His men in the present case were, as a rule, orderly, intelligent and capable. They took charge of the abandoned trains, and, while the service for several days was uncertain and more or less unsafe, the roads were kept open and the trains were successfully run by the strike-breakers.

There is a lesson to be drawn from this strike which is of real concern to organized labor the world over. It is that a strike which ignores the rights of the great body of wage-earners of the community, as this one did, cannot succeed. For every one of the strikers in the present case there were thousands of wage-earners who had to suffer in body or purse, or both, because of the strike, That means there was little or no local sympathy for the strikers, and without such sympathy strikes almost invariably fail.

Another New American Industry.

AFTER many experiments a growth of marsh grass has been found in California, U. S. A., suitable for the manufacture of matting, and a new and important field of industry has been opened up in the above-mentioned State. Formerly makers of matting imported their supplies of grass or "rush" from China and Japan and required it to be at least 20 inches in length and of uniform thickness. The grass that California now produces is from 20 to 32 inches in length and is claimed to be of splendid quality. The national Department of Agriculture has become actively interested in the new find and will experiment with the grass and other plants in the marshes of the States of South Carolina and Florida.

Two years ago there was an overproduction of matting, owing to the activity of the Japanese and Chinese, following a rich harvest. Due to a smaller crop and the present scarcity of labor in the Orient, there is but little of the raw material for matting in this country, and the commodity is in unusual demand. The discovery in California, it is believed, will solve the problem of the matting industry in this country in securing a regular supply of the raw material. If the experiments of the Government are productive of good results the United States may become an important exporter of matting. Some idea of the extent of the importation by the United States of the Oriental product may be had from these figures: In 1904 we imported 46,989,573 square yards of matting, valued at $3,423,137, as against 56,840,047 square yards, valued at $4,000,926 in 1903. The imported raw material costs $8 a ton, including freight and duty.

Discovered by Accident.

EDISON, the American wizard of electricity, states that he spent thirteen months seeking for material to make a perfect carbon button for the telephone, and that after all it was an accident that gave him the clue he had worked so hard to find.

This was nothing more or less than a smoking kerosene lamp. Edison was looking at it absentmindedly, his head full of that elusive carbon button. Suddenly he leaped up and made a wild grab for the glass chimney. The idea had come to him that perhaps kerosene soot would suit his purpose. He locked himself in his laboratory and began to scrape away the soot from the lamp-chimney, and when he had experimented with it whooped like a schoolboy, for at last he had found the best material for his button.

American Milling Machines.

THIS subject is carefully considered from an English standpoint in the following communication which we received from a London authority in such matters:

If one looks at the American machine it will be seen to be constructed on a strictly scientific principle. It is made with special reference to tool-room purposes, and, on being put to a practical test by an experienced workman, is found to be most conveniently arranged for every variety of work. It does not do merely a few things. The milling machines that I have in mind—and they are representative of American machine construction generally—are equally adaptable to milling cutters of all sorts, cutting twist drills, fluting taps and reamers, cam-cutting, die-sinking, nut and bolt-head finishing, cutting of spur, bevel and worm wheels and a multitude of other things. For the purpose of bringing out the specific points of advantage of the American make of machines over their would-be rivals I have adopted the following tabular form of statement:

1. *Accuracy.*—I do not think I can place any quality before this. Every practical man will recognize its absolute importance. Strict accuracy is rather a difficult thing to get in many machine tools. American engineers are making all their tools and machinery perfectly unimpeachable in this respect. I have placed this quality foremost as being a point of American superiority. The United States milling machines have, therefore, greater accuracy in all of the alignments, insuring more perfectly finished work.

2. *Quickness of Adjustment.*—Accuracy of work being obtained, the next desideratum is facility in producing this aim. Here we are on American ground, for it is in this characteristic of rapid and easy production that the manufacturers of America excel. By the superior arrangements of the various adjustments for setting the machines and quickly arranging for starting and stopping them is the output of work raised considerably, a man being able to do 20 to 30 per cent. more work in a day with such machines than he could perform with the foreigner.

3. *Strength.*—The American machine is strong, but not clumsy. Mere clumsiness is not strength, and even the best material will be wasted if the weak points are not doubly protected. In the American machines the strength is all put into the weak places and wherever it is required, so that they are a combination of strength and lightness, the latter feature always being added for the sake of convenience wherever it is possible without weakening the machine.

4. *Comparative Cheapness.*—Price is always an important consideration. If a foreign buyer will take the price-lists of competing firms of different countries, he will find that the American machine will be cheaper when quality is compared. And in this case relative cheapness does not mean inferior workmanship or material. Under the American system a manufacturer there turns out, say, 500 machines, where his foreign rival makes 50 or 100, simply because the former has a market for them and the latter has not, and generally build "to order."

5. *Greater Variety.*—A buyer of the American firm will find a greater variety of machines to select from, which give more suitable machines for special work. Specialists will note this with satisfaction, as by its means they will be able to obtain a machine which is particularly adapted to a specific branch of work.

6. *Equal to Three Other Machines.*—The United States machines, by means of special attachments, do the work of three ordinary foreign milling appliances.

All these points which I have set out here can readily be tested by buyers and a personal investigation cannot fail to be satisfactory.

The Copper Situation.

AMERICAN producers of copper report conditions which are of interest to foreign buyers. China is in the market for large supplies and Japan is taking many thousands of tons every month. Copper mining in Japan has practically ceased, as a result of the Russo-Japanese war, and this accounts for the pronounced demand on the part of that country.

American stocks of copper on hand amount to practically nothing, which is regarded as the strongest feature of the situation. Producers hold to the opinion that a good market is assured for the remainder of the year, but they do not believe prices will reach an excessive level. It seems to be the object of producers to avoid a violent market, which is invariably followed by crumbling prices. They have in view the boom in copper several years ago. The price was forced to the artificial level of 17 cents a pound, in the face of the fact that stocks on hand were exceptionally large. The price held at the high level for a while and then tumbled rapidly to about 10 cents a pound. The difficulty experienced thereafter in bringing the price up to a satisfactory level is generally known.

The General Electric and the Westinghouse Electric and Manufacturing companies' reports exhibit a good foreign business, with every indication that it will show continued improvement throughout the year. Both companies have been buying large supplies of copper.

A representative of the General Electric Company says: "The heavy increase in the consumption of electric supplies has been due more to the development of street railway systems than anything else. Electric lines are being constructed in every district that gives promise of paying a satisfactory income on the investment. So far as electric equipment is concerned, South America gives promise of becoming one of the most important fields in the world, with Russia, Asia and the Philippines next in order."

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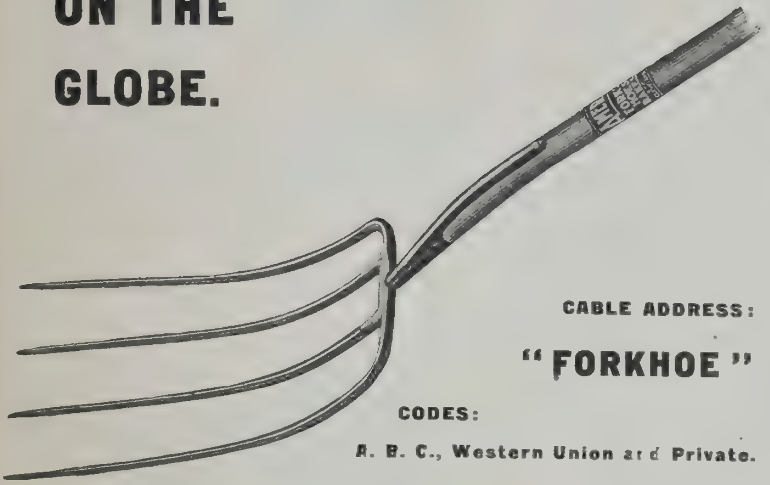

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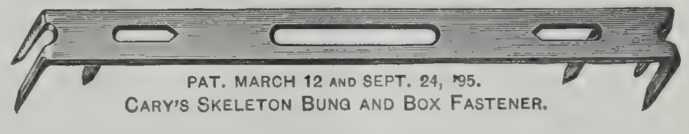

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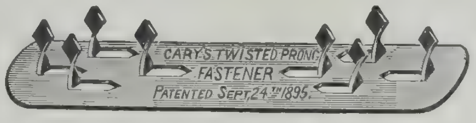

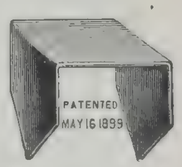

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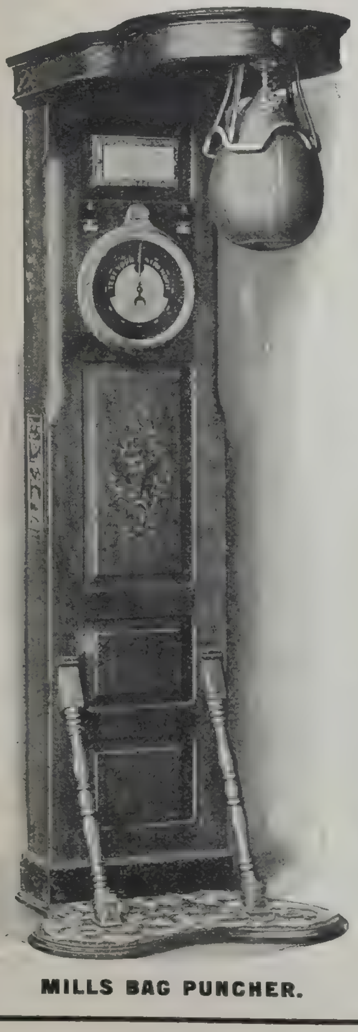

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Vacations and Health.

THERE are three good reasons why all employees should have vacations. One is so the employer can see how easily anybody's and everybody's place can be filled; the next is so the employee can see, when he returns, how well he can be spared, since things go right along without him; the third is so the employee can show the employer, and the employer can understand, that the employee is not manipulating the accounts or engineering deals for his own benefit. Many a defalcation could have been avoided had the trusted man been sent away two weeks every year and a new man put in his place. Outside of these, the vacation has little excuse.

As a matter of recuperation, the vacation does not recuperate, since, as a rule, no man needs a vacation so much as a man who has just had one.

The man who is so run down that he needs a vacation can never adjust and reform himself in two weeks. What he really needs is to transform his life.

To work during the year at so rapid a pace that in August one's vitality is exhausted, and a rest demanded, is rank folly. What we all need is enough vacation every day, so that we can face each new morning with health sufficient to do our work in gladness. That is to say, we need enough of a play-spell every day to keep us in good physical condition.

The man who is done up and fagged has not found his work. And the man who lives during the year in anticipation of a vacation does not deserve one, for he has not ascertained that it is work, and not vacation, that makes life endurable.

There be good people who travel by the Gorge Route so incessantly that their livers finally go on a strike, palates declare a lockout, and they laud the physical culturist and proclaim fasting a virtue. All this until reasonable health returns, when they again buy commutation tickets via the Whirlpool and play hockey with their inwards.

If you hustle so eternally that your system demands a vacation, you have got where you cannot do good work.

If you have reached a point where you cannot do good work, you cannot enjoy your vacation.

If you absolutely need a vacation, you are not in the mood to enjoy it, because it is thrust upon you by necessity, willy-nilly. Things forced upon us are never pleasant.

The only man who can really enjoy an outing happens to be the man who doesn't need it.

And the man who keeps his system so strong and well balanced that he doesn't need a vacation is the one who eventually will marry the proprietor's daughter and have his name on the sign. Before you manage a business, or a wife, you would better learn how to manage your cosmos.—ELBERT HUBBARD in *The Cosmopolitan Magazine.*

Through Line of Railway from San Francisco to Guatemala.

THE project of building a line of railway from San Francisco to the city of Guatemala appears now to be an assured fact. Henry Peckham, of Chicago, an engineer connected with the Pan-American Railroad Committee, in a recent interview in San Francisco said that a railroad system is gradually being extended south from Mexico toward Panama and north from Peru and the Argentine Republic to the isthmus. One of these lines, the Pan-American, he says, is already in operation to Tonala, a port 125 miles south of San Geronimo, a station on the Tehauntepec road, which has rail connection with the City of Mexico and then on north into this country.

"The Pan-American road," remarked Mr. Peckham, "is now being extended 200 miles south to Tapachula, and from there it will go into Guatemala. It will not be long before people can ride by rail from San Francisco to the city of Guatemala. D. P. Doak and associates, of St. Louis, are behind this project and they aim to extend the railroad 1,400 miles to Panama. It will take some years, of course, to build south of the city of Guatemala, but in my opinion the line will eventually be built.

"Quite a number of American engineers are surveying for different railroad companies both north and south of the isthmus. The extension of the Argentine railways north into Bolivia is rapid, proceeding under government supervision. The $10,000,000 it recently received from Brazil as a territorial indemnity is being used by Bolivia for new railroad construction. American capitalists are also figuring on building roads in Bolivia. Engineers sent out from the United States are now on the ground in the interest of these capitalists. In Chile the tunnel through the Andes, which will provide communication from Buenos Ayres to Valparaiso, is being rapidly bored, and Peru and Ecuador are planning north and south lines which will form links in the great Pan-American system of roads that will one day become a significant reality."

Large Farm Implement Exports.—The exportation of farm implements from the United States, which showed a slight decline for the year 1904, bids fair to not only make up past deficiencies during the present year, but to make a new record as well. A recent order for the shipment of harvesting machinery to the amount of nearly half a million dollars to South America is certainly a good beginning for the year and this is supplemented by demands for various kinds of farm machinery from other countries of unusual size.

High-Speed Photography.

AMONG the most brilliant achievements of modern science is the photography of objects moving at high speed. The exposure of the plate or film is exceedingly brief—a thousandth of a second or less—and while the work is interesting in every detail few laymen or even expert amateur photographers know with any degree of exactness how these results are obtained. While this high-speed work dates back scarcely ten years, pictures that involve it are passed by without comment.

While the advent of the dry plate or sensitized film is responsible to a degree for this rapid work the lens-maker has also made enormous strides toward perfection. In a recent article in *The American Inventor* C. H. Claudy says:

"In the early days of photography an exposure of several minutes was necessary to secure the desired fully timed negative. It was prophesied, however, by an early pioneer that the day would come when photographs could be taken in a second or less. Could that prophet look upon photography as it is to-day and see well-timed negatives being made in the twelve-hundredth part of a second and printable results from half that exposure, what wonder would not fill his mind.

"Just think for an instant what the twelve-hundredth part of a second really means. A railroad train going sixty miles an hour, or 80 feet per second, would move in such an interval less than one inch. A bullet, with a muzzle velocity of 1,200 feet per second, would get but one short foot from the muzzle before a twelve-hundredth of a second had elapsed. Could two bells be rung one one-twelve-hundredth of a second after the other the sound waves given out by them both would travel within 5 feet of each other—too close for any human ear to distinguish that there was more than one sound. Yet in this tiny bit of time the eye of the camera can record on the sensitive plate everything in front of it, with sufficient force to make a good negative."

The necessity of "fast" lens—that is, one that will allow a maximum of light to pass in the brief time of exposure—is mentioned, and then the writer proceeds to explain the mechanical means by which the exposure itself is obtained and regulated. In the ordinary camera a snap-shot is taken by means of a shutter that works in front of the lens. The fastest shutter of this kind gives an exposure of several thousandths of a second—much longer than those required in the high-speed photography of which we are speaking. The shutter used in this kind of photography, called the "focal-plane" shutter, operates not outside the lens, but inside the camera, just in front of the plate, of which it exposes different parts in succession.

"The focal shutter is a curtain which shades in front of the plate and having a slit cut in it. This slit travels over the plate, exposing it in successive intervals, a little at a time. Now, on a 5 by 7 plate, the curtain, we will suppose, travels from top to bottom along the short dimension. In other words, the slit travels 5 inches. Now, if this slit is 5 inches across it is obvious that the exposure will be equal to the speed of the slit—that is, if the slit travels 5 inches in the thirtieth part of a second, the exposure is one-thirtieth of a second in duration. But if the slit be made smaller, to 2½ inches across and run at the same speed the exposure will be one-half of the first one, because the opening being half the area of the first, but half the amount of light can pass in the same time. The exposure then is one-sixtieth of a second. With a curtain slit of 1¼ inches the exposure is one one-hundred and twentieth part of a second. With an opening ten times smaller, or one-eighth of an inch, the exposure is one-tenth of that amount, or one twelve-hundredth of a second.

"And that, in fact, is how such exposures are made. The focal-plane shutters are made with the curtain in two parts, so that the slit can be adjusted, and the actual speed of the curtain seldom exceeds one-fortieth of a second. One-fortieth of a second, the time required for a slit required to slide 5 inches, works out for the speed of the slit in miles per hour as follows: Five inches in one-fortieth second is 200 inches in one second, 12,000 inches in one minute, or 1,000 feet; 1,000 feet per minute is 5,000 feet in five minutes, or, approximately, twelve miles per hour, a speed at which it is quite feasible to start and stop a comparatively delicate piece of mechanism."

The World's Coal Supply.

THE figures of the amount of coal which is taken out of the mines throughout the world every year are confusing in their immensity, and as new mines are opened constantly in every land where coal deposits are found the extent to which this important industry may grow can scarcely be estimated.

The United States produced 319,000,000 metric tons of coal in 1903, worth at the mines $485,000,000 and costing consumers nearer $1,000,000,000. More than three-fourths of this coal yield is bituminous.

No other country produces nearly as much. Great Britain sold in 1904 48,000,000 tons, worth $130,000,000, yet her total production is nearly a hundred million tons below that of America.

Germany produced in 1904 192,000,000 tons of coal, coke and lignite, but the strike lowered the output to some extent.

Austria-Hungary produces and uses less than a quarter as much coal as does Germany. Big Russia produces less than little Belgium.

The world's average production of coal is half a ton per inhabitant, while the United States produces four tons per inhabitant, with a thousand or more mines as yet undeveloped.

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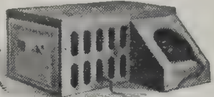
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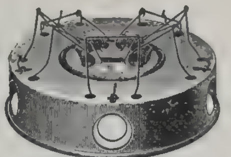
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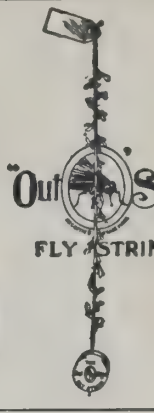

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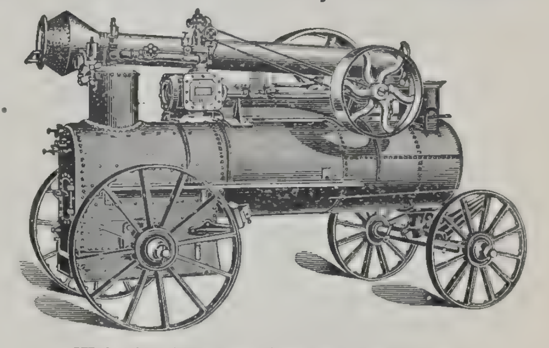

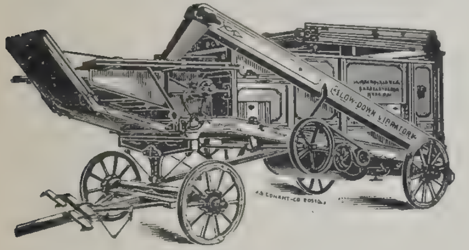

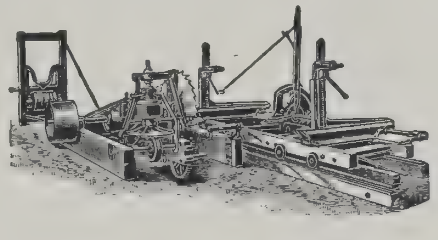

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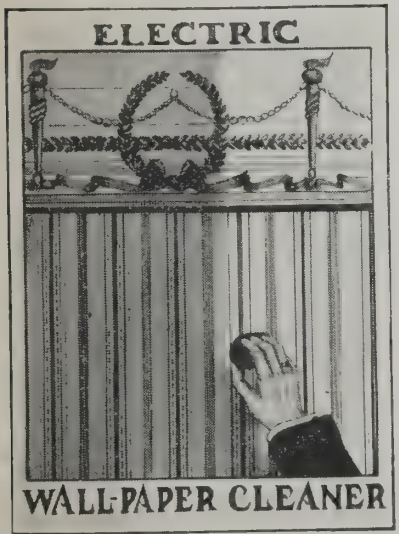

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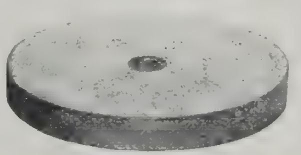

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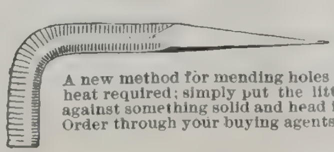

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Courtesy as an Asset in Business.

THAT courtesy is an invaluable asset in the world of business is being appreciated to a greater extent daily, and merchants in every walk of life realize fully that consideration and kindliness are quite essential to success. Seldom, however, has this admirable faculty been so happily described as in a recent statement by Dr. Newell Dwight Hillis, an eminent speaker on economic subjects and who is one of the best-known orators from the pulpit.

Dr. Hillis writes: "What culture is to the scholar and perfume is to the flower, courtesy is to a gentleman. Kindness makes the youth a maker of happiness. Courtesy is a delicate exhalation that sweetens the atmosphere. Good-will diffuses itself in a genial glow. It has been said that a gentleman is for his companions' minds what an easy-chair and a warm fire are for the body. It makes youth consider the rights of others, and once the law of kindness is fixed in the heart it manifests itself in good fellowship, wholesomeness, cordiality and those refined attentions that go to make a youth popular among his companions."

The sentiments expressed are so full of meaning that they should be indelibly emblazoned upon the minds and hearts of every one throughout the world. It is well that men in all walks and conditions of life should be reminded that the humblest of them, as the learned divine further says, "should remember that roughness is a sign of weakness."

"Some men are so harsh that their softest word is a blow. There are blunt, brutal men who ride rough-shod over their fellows and companions, and they say: 'Oh, you mustn't mind me; it's a way I have!' Suppose a porcupine were to say: 'Don't mind my quills; it's a way I have!' A hedgehog has its way, but the way is very bad. Bad manners, sarcasm and disregard for the rights of others are great faults. Remember that one yellow stain ruins a marble, one black spot on the ceiling ruins the fresco and one great fault, like the absence of courtesy, can injure character, threaten prosperity and halve one's influence and success."

Over the desk of the president of one of the largest railway systems in the United States is a frame bearing the inscription: "Not servants but brothers." That official started as a yard clerk at a small station in one of the Western States, and by hard work, courtesy and kindness to his fellows has by gradual steps been promoted to his present commanding position. He explained the meaning of the inscription by attributing whatever success he had attained in his career as a railway manager to the fact that he had always treated the employees under him as companions and brothers rather than menial servants.

In this age of strenuous effort kindness and courtesy toward all, no matter in what walk or condition of life, is a sterling virtue. Again, Dr. Hillis says: "Ours is a world that is harsh in its judgments and cruel in its criticism. Young man, restrain your tongue! Be kind. Practice courtesy. Keep the ideals of Sir Walter Raleigh's gentleman ever before you. Don't pelt the unsuccessful with words like stones. Consider that what the north wind cannot do to produce a harvest the south wind, blowing softly, can easily accomplish. Hate is as powerless as a blizzard. Love is as omnipotent as the sunshine. Distribute joy by your daily kindness. Go out like a sower and sow benefactions like a prince. Live with the courtesy of one who feels himself to be a natural king."

The Fate of Elias Howe, the Inventor of the Sewing Machine.

SPEAKING of inventions which have proved great successes in the past, one cannot help but think of old Elias Howe, the inventor of the lock-stitch sewing-machine. He had spent years in poverty, laboring to perfect the machine which was destined to work wonders in the manufacture of all kinds of wearing apparel, yet he did not fully realize the full value of his labor when he gladly accepted the offer of a corset manufacturer of Cheapside, London, of £250 for the English patent and gladly went to work for him on a weekly salary to further improve the machine which in after years was destined to make it more suited to the manufacture of corsets.

He did not then dream that a half-century hence thousands upon thousands of weary toilers in sweatshops and factories all over the world would be turning out clothing by the carload, ready for the purchaser to put on and wear at a moment's notice. The idea that his inventive genius in the years to come would drive out of employment thousands of shoemakers all over his native land never probably entered his mind. And yet this man of genius, after a checkered career of five years in London, pawned his American patents in England and returned to the United States a disappointed and penniless man. Such, oftentimes, is the irony of fate.

American Threshers.—At the invitation of the Spanish Government a threshing-machine manufacturing company, located at Richmond, Ind., U. S. A., will send a complete outfit to Spain. The Agricultural Department of Spain has given the following special order: "Please give special attention to the machinery, especially as to finish, as His Majesty, the King, will personally attend the starting of the machinery."

Railroad Material for Australia.—Steamers to sail from American ports before March 15th for Australia, will carry fully thirty-five hundred tons of steel rails and other railroad materials, to be used on Australian railroads. One of the lots is on a contract under which ten thousand tons of rails have already been forwarded.

Statesmen Want International Peace.

WITH the great war in the Far East the necessity for an international peace congress becomes more apparent to the civilized world. In a recent interview Theodore Roosevelt, President of the United States, said: "I have not abandoned the idea of obtaining with the leading Powers of the world definite, comprehensive and effective agreements as to a scheme of international arbitration. It will be my effort to have the matter so presented to the attention of the second Hague conference which is to be held at the conclusion of the Russo-Japanese war, as to insure favorable action of a character that will be binding upon all the Powers signatory to the proposed new convention.

"Instructions will be given to the representatives of the United States at the conference to press for such an agreement. The details of the instructions have not been worked out yet, of course, as the time of holding the conference has not been determined, but it is understood that the effort of this country will be to have specified with some definiteness the subjects which under the proposed agreement may be submitted to arbitration." Such an agreement, according to this view, would be more effective than the general treaties entered into between the United States and other countries individually.

Notwithstanding the action of the Senate, therefore, in so amending the treaties as to prevent the exchange of ratifications, the President will endeavor to obtain even more tangible results through the plan he now has in mind. He discussed the subject of international arbitration with Hayne Davis, of New York, who has made a study of the subject, and Representative Bartholdi, of Missouri, president of the Inter-Parliamentary Union. Mr. Roosevelt's callers found him confident that much would be accomplished in the cause of arbitration at the proposed conference at The Hague, where, he believed, an arrangement could be made for the arbitration of certain specified subjects to the exclusion of such others as might cause either international friction in the countries affected by the terms of the agreement or strained relations between any two of the Powers signatory to the results of the conference.

Vice-President Fairbanks has also given deep thought to the subject, and in a recent speech made before the Illinois society in New York City spoke earnestly of the United States as the logical leader for universal peace. He said in part:

"We do not stand in fear of the greatest among foreign Powers, not because of our obvious ability to assemble vast armies, not because of our acknowledged maritime strength, but because, beyond and above these, of our high conception of right and justice among the nations of the earth. If we are inspired always by a sense of international right, we shall not invite alien assault. We shall invade the territory of no other Power and no other Power will seek lightly to invade ours.

"While we build navies and support armies and seek to increase their efficiency, keeping step with our national growth, let us diffuse among our people that just sense of decency and honor among men which is a more powerful influence in the preservation of the world's peace than any manifestation of physical force. It is sure to be a guaranty of tranquillity which is abiding and which is worth the having. That international peace which is the fruit of moral forces is dearer than that which is predicated upon mere might.

"We look upon the growth of a sentiment in favor of arbitration among nations with the utmost gratification. The American people hold to the doctrine that international differences should be settled by some other means than appeal to force; than by a resort to the cold and merciless arbitration of arms. We believe that the time has come in the world's progress when international differences, as a rule, can and should be determined in the high court of reason.

"While we rejoice in our heirship to the glories and honors of a common State and a common country, we do not share in allegiance to a common political party. Nevertheless, I believe that, without any suggestion of partisanship, I interpret the sentiment of all who are assembled to-night when I say that President Roosevelt has rendered the cause of international arbitration distinct and lasting service. In the onward and upward march of civilization, when the nations shall meet to settle the grave questions that must arise, it is a matter of delight that they will meet under a roof erected by Andrew Carnegie, who sits at my right hand to-night—the greatest philanthropist since the world began.

"American ideals will in good time work a revolution in the world's thought because they are founded upon those fundamental principles which are promotive of liberty and equality among men."

Electric Railway Expansion.

MUCH interesting data may be gathered relative to the development of electric railroads in the United States from the report just published by the Census Bureau of that country and covering a period of twelve years. The increase in electric railways during the above period was more than 20,000 miles. Without considering the cost of the steel rails the other paraphernalia and equipment, together with the cost of rolling stock, all of which was manufactured in the United States, has reached an enormous amount, and vastly in excess of that spent by any other country during the same period.

The economic and social results of the expansion of the electric railway system in effecting new and advantageous redistributions of population are very great. Cities are expanding rapidly and their desirable residence areas are pushing further and further from the congested centers of business. Every mile added to the practicable separation of the home of the wage-earner from his work makes for good to himself and to every member of his family.

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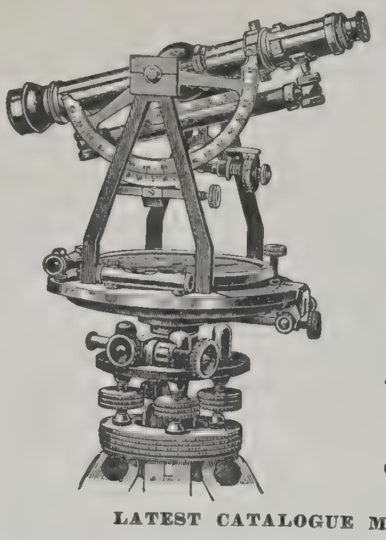

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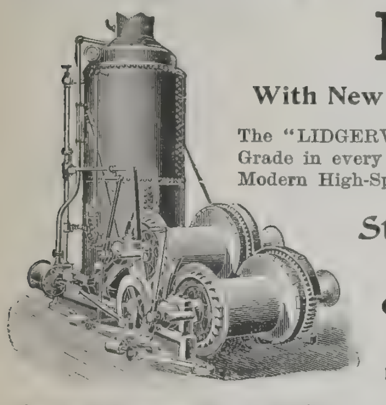

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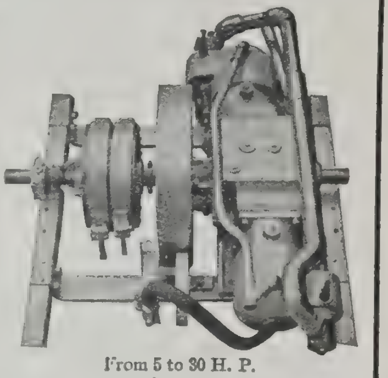
Yours truly, (Name given on application.)



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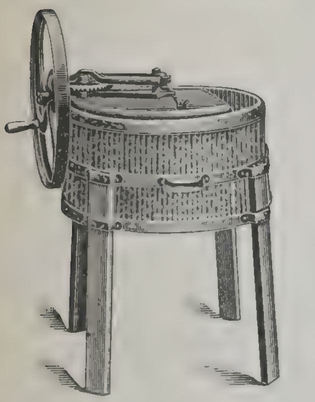

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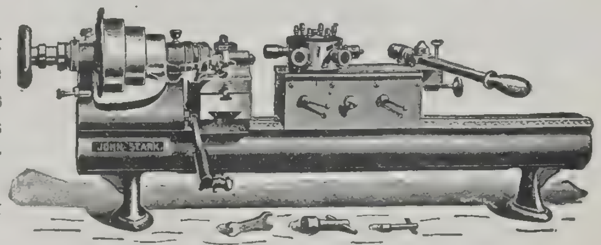

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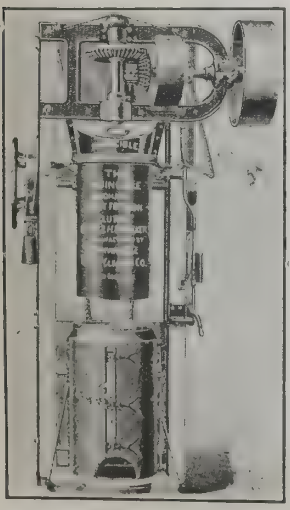

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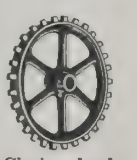

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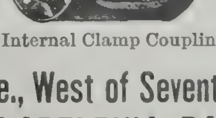

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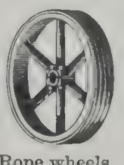

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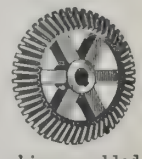

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Artificial Silk.

IT is reported that a German association is to establish works in America for the manufacture of artificial silk, and that the construction of the plant will soon begin. It is expected that the product will shortly appear in the list of exports from the United States.

For more than one hundred and fifty years efforts have been made to find a cheap substitute for genuine silk, and after thousands of failures cellulose has has been found suitable for producing brilliant threads of silk-like appearance. There are two principal processes, in one of which the collodion is spun while dry and in the other it is spun while wet. Ludwig Braun, a well-known scientist, of Crefeld, Germany, in an essay on silk, says:

"In order to arrive at a conclusion as to how far artificial silk can replace the natural product, it is necessary to compare the physical and chemical qualities of the natural and artificial weaves. Under the microscope all artificial silks differ from the natural in their greater thicknesses. Tussah silk alone resembles artificial silk.

"Artificial silks, without exception, possess the quality of at once distending largely in water, which increases their thickness one-third to one-half, while natural silk does not distend perceptibly. This distending seems to be the reason that artificial silk, in a wet state, loses much in firmness. The artificial product is of an even white color, of a silky touch, and when pressed together has even some of the characteristic crackle of genuine silk, the so-called silk cry. It greatly excels natural silk in brilliancy."

The great cost of natural silk, the care necessary in developing the cocoons and extracting the natural silk for the market has incited many inventive persons to the work of discovering a substitute that would answer equally well in many manufactured articles, especially in the passementerie industry, and the manufacture of trimmings and embroideries. The cellulose referred to is thus far the most satisfactory product of such discoveries.

In all these industries and others, such as the manufacture of straw hats, the cellulose has not only answered the purpose, but has been preferred by many. It is said that the hats made of it "excel the ordinary straw hats in brilliancy."

There is also an important branch of this business in the manufacture of an imitation of human hair, called "meteor," made of artificial silk. This hair is said to be as soft as the natural growth and cannot be distinguished from it by most persons. It is cleaner and cheaper.

An important fact is that the price of human hair is often twenty-five times as high as the artificial article. It is also much heavier and more difficult to manipulate.

In silk-producing countries artificial silk finds to-day an increasing market.

Strongest Argument Against Labor Troubles.

IN declaring that self-interest is the strongest argument that can be advanced against labor troubles, the New York *Commercial* says that "the success of the profit-sharing plan of the United States Steel Corporation has been recorded for the third time. It is announced that the entire allotment of 25,000 shares of the company's preferred stock has been subscribed for by the employees. The experiment begun in 1903 and entered upon with some hesitation by the 'parties of the second part' has worked itself out to the entire satisfaction of all concerned.

"In the agreement the company offered a bonus of $5 a share to every man who remained in its employ at the end of the year. They were given a 7 per cent. dividend on their stock and bought it at $82.50 a share. It was an investment that any capitalist would have considered splendid—an investment paying something like 16 per cent. But capitalists or outside investors were barred, of course, from the bonus feature of the plan."

The experiment, however, had to be tried out and a good test was given by the year of business depression which followed. The outlook for steel, as for other industrials, was gloomy, all its shares being below par. Notwithstanding the unpromising aspect of business, the Steel Corporation made another offer of preferred stock to its employees on a basis of $55 a share. Although there was some hesitation about accepting the offer there were many who thought it best to avail themselves of the opportunity to make what seemed to be a good investment, and 32,000 shares were distributed.

As a reward of their confidence the prices of the 25,000 shares at first distributed is $87.50. Those who bought at $55 have profited immensely—if they sell out; purchasers of 1903 have profited, and the present distribution is of great advantage to the employee. As the business of the Steel Corporation is good this year, and promises to be even better, the success of the profit-sharing venture begun in 1903 is assured, and this emphasizes the fact that self-interest is the strongest argument against labor troubles that can be advanced.

The United States Post-Office.

SOME interesting facts are learned from a perusal of the last statement of the United States Post-Office Department. It can be truly said that the United States Post-Office Department is the largest business system in the world.

In the year ending June 30, 1904, it transmitted through 71,131 post-offices, approximately, 9,500,000,000 pieces of postal matter, an average of 115 to each man, woman and child in the country, and received from all sources $143,582,624, and paid out $152,362,116, leaving a deficit of $8,779,492 to be paid from taxes.

To Encourage Road-Building.

THE value of good roads is so keenly appreciated in the United States that the authorities of many States are appropriating large sums of money for the construction of improved highways. In several great States like New York, New Jersey, Pennsylvania and Ohio the money is spent on condition that the taxpayers of the counties in which the new roads are built shall pay a sum equal to that granted by the State.

The national Government has as yet taken no direct part in the good roads movement, but various measures, with that end in view, have already been proposed, and it is likely that favorable action will be taken in the near future. The Government has shown its interest in the project by establishing a Bureau of Road Inquiry at Washington, which, in addition to supplying accurate information on the subject, makes free tests of samples of materials to ascertain their values in road construction. These samples, many of which are received from all parts of the country, are examined by experts to determine their usefulness. If the substance is rock, a piece of it is ground in a machine to finest powder, mixed with water to a dough, and molded into the form of a small cylinder. This, when dry, is put beneath a delicate mechanism which causes a weight to fall upon it repeatedly from a height. The number of blows it will endure before breaking determines the "cementing quality" of the material.

When broken rock is put on a road, as in macadamizing, it is soon ground to powder, and when rain falls, if it be the proper sort of stuff, its particles will become cemented together, so that the surface of the road is converted into a solid and permanent pathway for vehicles, off which water runs as from a roof. If, on the other hand, the cementing quality of the material is poor, it will be washed away by the rain and blown away in the form of dust by the wind.

To test the strength of the rock the experts take another piece of it, and, with the help of a diamond drill, cut out a cylinder an inch in diameter. This they place under the falling weight, letting the latter drop from greater and greater heights until the cylinder splits. Thus they ascertain exactly how much resistance the rock will offer to pounding by horses' hoofs and crushing by wagon-wheels—a question of great importance, inasmuch as the stone-built road, though its surface be converted into a mass of cemented particles, has a foundation of broken rock.

The Road Bureau also tests clays for the making of brick and pottery, and one thing its experts have ascertained is that the plasticity of certain clays—such as the kind used by sculptors—is due to the fact that they contain numerous tiny particles which become sticky under the action of water.

Incidentally, experiments are being made in the production of concrete fence-posts. It is believed that such posts, of artificial stone, would save the farmers much trouble and money. They could make them in the winter-time, when there is not much else to do, and, once planted in the ground, they would never wear out. The materials used are gravel, sand, cement and water, which are mixed together and molded in a wooden trough, four thick steel wires being run lengthwise through each post to give strength.

Formula for Whitewash.

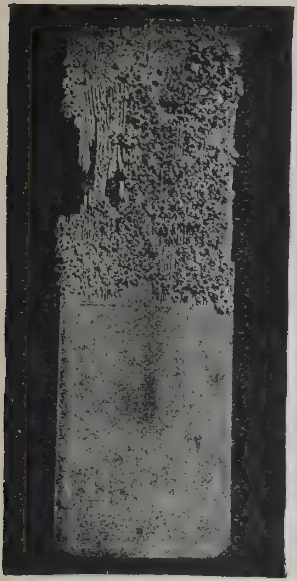
THE use of a good, durable whitewash is an absolute necessity in tropical countries throughout the world. The following formula for making whitewash has stood the test of years, and when properly applied will last almost as long as paint. While the ingredients are not exported from the United States the formula is published for the information of our readers. It is usually known as the Government whitewash, and no matter how often this formula appears in print there are calls for its repetition. As it must be applied hot to any surface it should be made or kept in a large kettle or portable furnace in order to heat as wanted.

It is claimed that about a pint of the mixture will cover a square yard upon the outside of a house, if properly applied, and that it is suitable for wood, brick or stone, and will retain its brilliancy for years. Brushes, large or small, may be used, according to the neatness of the job required. Coloring matter may be employed, varying the tintings to suit the taste. No matter what quantity is desired, these are the proportions in which the ingredients are to be used:

Half a bushel of good, unslacked lime; slack with boiling water, covering during the process to keep the steam in; strain the liquid through a sieve fine enough to retain all unslacked lumps. Dissolve a peck of clean, barrel salt in a little water and add to the solution; boil to a thin paste three pounds of rice and stir into this boiling hot; one pound of nice glue, previously dissolved (to dissolve the glue, first soak until soft, then put into a vessel, immerse this vessel in another larger one full of boiling water and boil until liquid) in water and half-pound of whiting. To this mixture add five gallons of hot water, stirring well; cover closely and let stand several days.

American Trade with Syria.—Six years ago imports to Beirut from the United States hardly could be said to exist, says United States Consul Ravndal in a recent report, as beyond books and other goods sent for by our missionaries, the osly imports of any importance of American goods were sewing machines, resold from Glasgow. Imports from America to Beirut during the last fiscal year, Consul Ravndal adds, amounted to $202,790.

"NEW JERSEY" COPPER PAINT



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A Perfect Substitute for Pitch.

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Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint,** manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."

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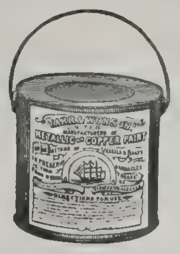

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TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

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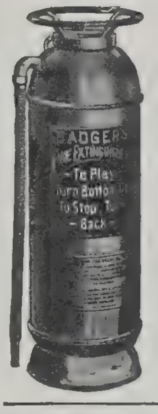

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Practical Use of the Magnet.

THE increasing use of labor-saving devices in mechanical enterprise in the United States is strikingly illustrated in the operation of two powerful magnets which have been installed in one of the great steel mills in the city of Cleveland, O. The larger of these magnets is 3 feet in diameter, weighs 1,700 pounds and has a carrying capacity of 30,000 pounds. It is fastened by chains to the great hook depending from a carrying crane. Electric wires run from the little cabin to the carrying crane, and the man who controls the machinery of the crane also controls the electric current, which he turns on and off much as one would turn an electric light.

The design of this magnet is the result of years of experience in building lifting magnets. The case is a heavy casting made from such a grade of steel that when the circuit of the energizing coil is opened the magnet drops its load instantly. This also insures the magnet taking hold of its load instantly, so that no time is lost.

The energizing coil is form-wound, heavily insulated and treated by a special vacuum impregnating process which insures it against grounding or short circuiting. The coil is completely enclosed and protected by the case, which is ribbed to provide for the rapid radiation of the heat of the coil.

The current is led to the coil through a heavily guarded plug connection. This plug is simply pulled out when it is desired to take the magnet off the crane hook.

The magnet is moisture proof, dust proof and so heavily constructed that it cannot be injured by rough usage.

The working face of the magnet is concave in shape. This concave surface has been given so that the pull toward the central pole will be stronger and the magnet can more readily attract the greatest possible number of articles.

It is like a fairy tale to see the magnet at work. The little magnet that carries the iron plates is interesting enough, that small, simple-looking thing that is placed upon a great iron plate and raises it without the help of chains and carries it—not only one plate, but many, and often with one or even four men standing upon the plates. To outsiders it seems curious, but the fact remains that the men so standing and riding upon the plates do not feel the shock of the electricity at all.

But still more interesting is the other magnet, bigger in size, though not in carrying power, for it will pick up anything and everything that is, by the law of nature, attracted by a magnet.

The magnet is lowered, for instance, above a little pile of iron posts or drawbar couplers, as they are technically known, standing on end, leaning against each other and each of them weighing a matter of 200 pounds. When the magnet gets a few inches above them there are quick little jumps and every one of those heavy posts is going through the air, all on a mad race to see which can first reach the center of the magnet. Then they cling side by side, the magnet being able to hold five or six of them.

Again, place the magnet over baled tin, eight bales to a load, and it will carry them easily. It has been found most useful in loading and unloading scrap tin. Of course, the weight lifted is not great, but the work is done much more quickly and easily than it could possibly be done in any other fashion. Pig iron, sand-cast and machine-cast, scrap iron knuckles of car couplings, fine iron borings like iron sand—anything that is attracted by the magnet—may be lifted and carried by it.

The whole process is interesting to the observer, but the prettiest experiment tried by the manufacturers of the magnet is that of the iron borings. The borings lie in a heap like so much sand. The magnet is lowered and the pile begins to stir as though it were alive; then the particles adhere together and rise as the fur rises on the back of an angry cat; then, as the magnet comes still lower particles about the shape of tadpoles detach themselves from the heap and fly upward with a peculiar darting motion, to stick fast to the magic surface, which at last attracts hundreds of pounds of the substance, which clings all about it, hanging in fringelike masses in the center and clinging tight and close about the sides. Release the power and instantly the particles fall back again, though they remain magnetized for some time and will adhere to the blade of a steel knife ten minutes after the magnet has left them.

The use of these magnets promises to revolutionize the labor of shifting material in the iron and steel mills. It is so much easier and so much cheaper. It has been estimated that, counting the cost of labor, of power, the original cost of the magnet and the wear and tear upon it, material may be handled at the cost of 2 cents per ton. At present the rate is about 6 cents.

Cutting Off Telephone Eavesdropping.

THE *Searchlight* magazine for March has this to say relative to a new attachment to the telephone: "A patent for a very unique device has been issued. The invention is a device, if reports are true, which promises to revolutionize the telephone service, especially that of the rural districts, where more than one, and as high as fifteen subscribers, use one line, known as a 'party line.' While these telephone lines have provided a good thing for the people generally there has been one great drawback—namely, the habit of 'eavesdropping' while others talked. This has become so general that in that section business men will no longer talk business over the line for fear some one is listening. The new device will change all this. It is so arranged that when one party on a telephone line calls another all other subscribers are automatically cut off and cannot hear what is being said. When the parties are through talking the device again opens the line for the next call."

Steel Cars and Safe Travel.

SINCE it has been shown by the records that the greater part of the injuries and fatalities on railroads are due to collisions and derailments, it is manifestly the duty of railroad corporations to render all rolling stock, and particularly passenger cars, as near as possible proof against collision.

While it is too much to expect that any railway system will ever be so perfect as to eliminate all collisions of trains from their service, it is possible so to construct the passenger coaches as to render them almost, if not quite, unbreakable. The steel car, it is claimed, meets this requirement.

In heavy collisions it is the telescoping of one car into another that kills and wounds the passengers, but steel cars cannot telescope, or this danger is at least reduced to a minimum. Even with the momentum of a heavy train behind it, the platform of the telescoping car is unable to shear its way through the vertical steel posts (angle irons, channels or T-irons) which form the frame of the car body.

Following the line of least resistance, steel cars, in such collision, will slide past each other, or be slewed around and rolled to the side of the track. In this case the injuries to the passengers will be only such as are due to their being thrown violently around, and will generally be limited to cuts and bruises. The all-steel cars of the New York Subway and the composite cars with steel underframes have probably already saved more lives and limbs of the public than the operating company would care to admit. Had the collisions which have already occurred taken place between wooden cars of the old type the casualty list would have been much longer.

The Mysteries of Radium.

RADIUM, its discovery and its effect on scientific theories, were discussed in a recent lecture by Prof. Franklin C. Robinson, of Bowdoin College, before an audience at Portland, Me. He said in part: "Radium is an element. To-day there are eighty elements, where not many years ago we knew only sixty, and there are a dozen or more substances which are still in doubt. Radium is one of the heaviest elements, its atomic weight being 225. It has not been seen in its pure form yet, as like scandium, it will take time to free it from the combinations in which it is found. It dissolves in water and is probably very hard and heavy. So far it has been found in association with varium, but has been purified enough to be prepared with bromine.

"The leading peculiarity of the substance is what is known as radio-activity, meaning that its atoms act in a way different from any action heretofore known. Electric lights derive their power from the dynamo, however far distant. We understand that and something about the sun's heat, too, but radium is beyond our present knowledge. It acts without cause, as far as we can now tell. It sensitizes photographic plates, even when they are covered, and its force is apparently not diminished perceptibly by its action, which is going on continually."

A Remarkable Locomotive.

RECENT tests on the Southern Pacific Railway, in the United States of America, point to the early development of a locomotive that will require neither coal nor water in its operation. An experimental locomotive of this type has proved successful in extensive trials.

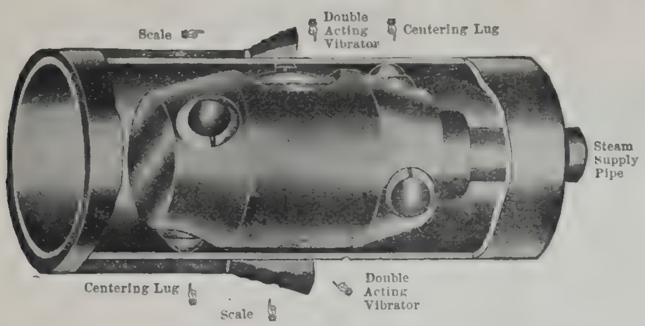
To some extent the project is an experiment, but it is one of much promise. Stationary engines, working on the same principle as that of the proposed locomotive, are coming into extensive use. They are not so numerous as those in which gasoline is employed, and their capacity is limited to a few horse-power, but they are successful. That is the main thing. It was a foregone conclusion, therefore, that some enterprising machinist would sooner or later suggest the application of the system to railway service and seek to enlist in the venture an enterprising corporation like the Southern Pacific. Whether crude oil will act as well as the refined petroleum hitherto tried is open to question, perhaps, but otherwise the scheme appears to be entirely practicable. Its advocates have reason to be hopeful concerning the outcome of the attempt.

Already much of the petroleum produced in the Southwest and on the Pacific Coast is being utilized on railways as fuel. A much wider adoption of it for the same purpose in coming years can be confidently predicted. Hence it is of great importance to discover the best method of deriving benefit from this magnificent mineral resource. When a pioneer locomotive of the kind here described has once been put at work it will be possible to ascertain if any more power can be obtained from a gallon of oil vaporized and made to drive a piston by explosion than is afforded by using it as fuel under a steam boiler.

It is not improbable that the new plan will be found to be more economical than the old. That a pound of coal has a higher efficiency when converted into gas and employed in a gas engine than when burned in a furnace is a well-established fact. An advantage of the same nature, if not of the same extent, may attend the proposed innovation in the use of oil. This possibility, in fact, will appeal more strongly to railroad men than any other feature of the experiment.

American Paper Factories.—According to *The Papa Paper Mill* there are at present over 1,200 paper, pulp and chemical fiber mills in operation in the United States, that produce more than 4,000,000 tons of paper a year, the value of which is more than $160,000,000. The capital invested is about $200,000,000, about one-half of which is invested in machinery. Last year there were no failures and no plants were shut down or abandoned.

THE TORPEDO REMOVES SCALE.



The Torpedo is similar to the pneumatic tools, but is used only for jarring scale from the *outside* surfaces of fire-tube boilers. This machine runs with steam or compressed air, tapping the inside of tube at 3,000 times per minute, breaks and jars off all scale from the outside. The Torpedo cleans the tubes which are impossible for a man to reach, and is saving hundreds of steam users many times its cost every year. Made for tubes 1½-8 inches in diameter. Order sample through any American exporter. Write to-day.

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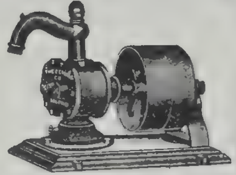

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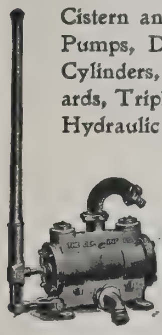

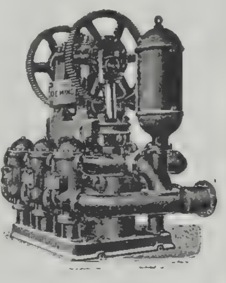

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Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of **Malleable Iron.** All bearings chilled. Attached to any box **Instantly by Clamps.**

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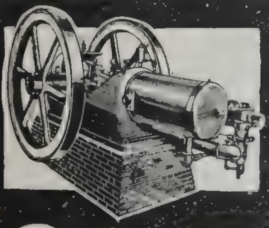
A. H. PATCH, Patentee and Sole Maker, **Clarksville, Tenn., U. S. A.**



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Are backed by a broad guarantee that absolutely protects the purchaser against faults or breakage due to construction or material used. Its liberal terms are made possible by the experience of years which have established the success of the OLDS patents.

Stationary Engines, 2 to 100 H.P.
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Our new illustrated catalogue will be sent on request.

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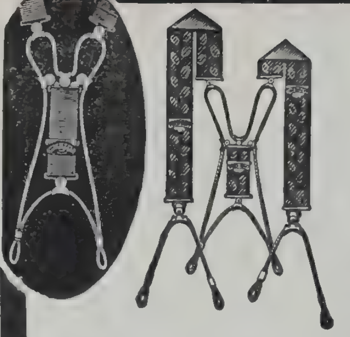

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SUSPENDERS

Known everywhere for their comfort, style and service. Made in four weights; hundreds of different patterns.—Absolutely guaranteed—Genuine has "President" on buckles.

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Swing like a pendulum with the motion of the leg. Lay flat; no binding; fit every leg perfectly. Easily adjusted. No stitching. Extra long adjustment.

Finest web, in many colors and patterns; packed in handsome boxes, 12 to carton. Handsome counter display carton with 3 doz.

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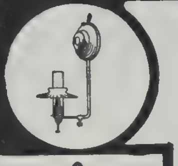

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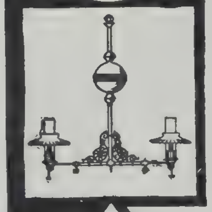

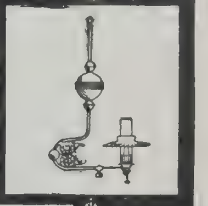

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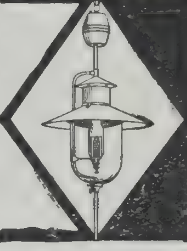

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Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

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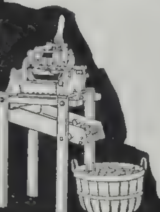

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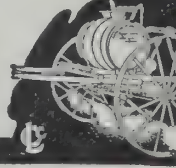

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to the prospective purchaser, of determining the most desirable type of ice-making or refrigerating machine. He can learn at the "dear school of experience" or he can make use of records and information in possession of the

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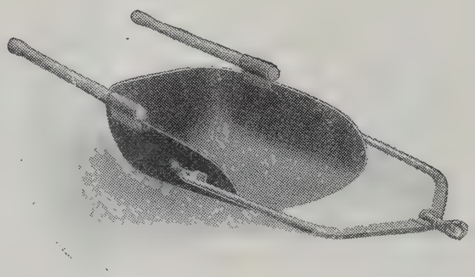

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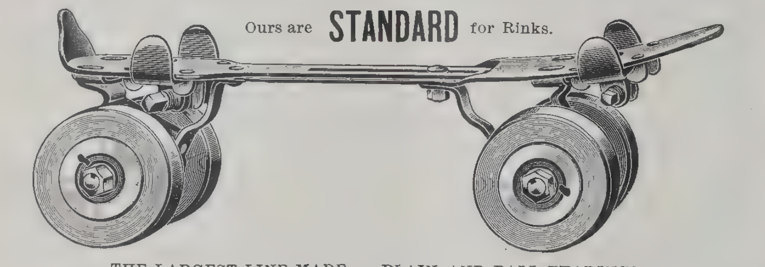

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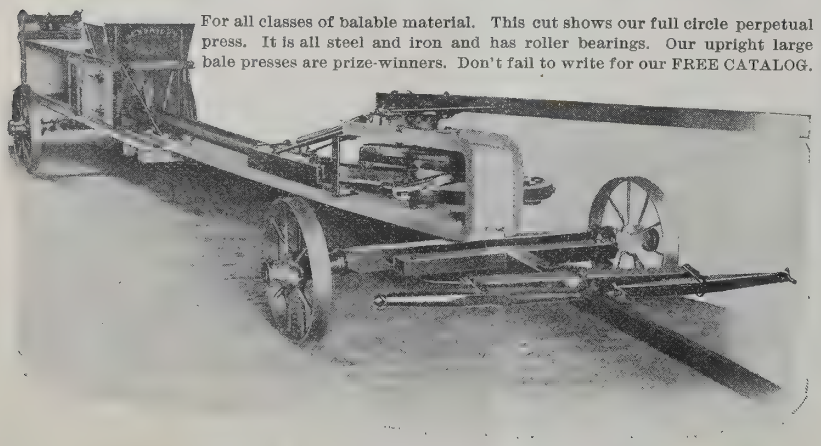

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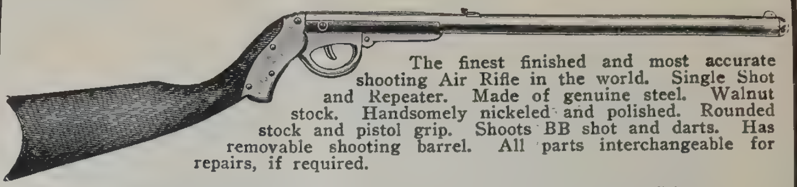

The finest finished and most accurate shooting Air Rifle in the world. Single Shot and Repeater. Made of genuine steel. Walnut stock. Handsomely nickeled and polished. Rounded stock and pistol grip. Shoots BB shot and darts. Has removable shooting barrel. All parts interchangeable for repairs, if required.

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Upon receipt of $25 in United States Gold or its equivalent, we will box and crate, ready for steamer, and deliver f. o. b. cars New York, three dozen "King" Single Shot Air Rifles and one dozen "King" Repeating Air Rifles. Four boxes in all, crated. Gross weight, 112 pounds. Net weight, 84 pounds. Dimensions, 12x15x33 inches.

The "King" Air Rifle sells quickly and satisfies the buyer every time. It's a gun-like gun and a reliable Air Rifle.

We are the originators and inventors of the Air Rifle and have the largest plant devoted exclusively to the manufacture of Air Rifles in the world. This of itself is strong evidence of the superiority of our Air Rifles.

Order through any responsible exporter. Send for Catalogue of our full line of Air Rifles.

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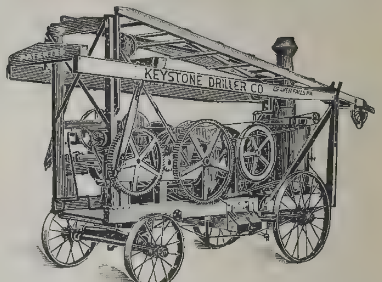

Our Catalogue No. 1 describes

Water Well Machines

of many sizes, both traction and non-traction, for wells 50 to 1000 feet deep, and gives full illustrated instructions for operating.

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Mineral Prospecting Machines

for exploring for Iron, Lead, Zinc, Coal and all minerals. Several sizes, both traction and non-traction. Also

Placer Gold Testing Machines

for assaying Alluvial Deposits, Lake and River Beds to bedrock. Can be used on boat. Also sectionalized Machines and Boilers for easy transportation to difficult places. They make 6 and 8 inch holes through anything and bring to the surface everything found. Full instructions for operating.

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Our machines are the sum of all excellence, in use all over the world.

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Manufacturers of everything required to drill and complete Wells for

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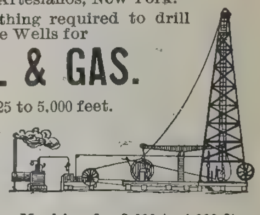
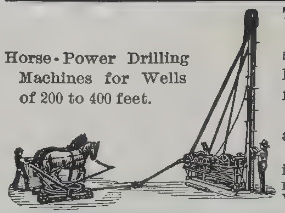
Any depth from 25 to 5,000 feet.



Machine for 2,000 to 4,000 ft.

Also Special Tools for Soundings and Test Borings for **Water** and **Mineral Prospecting and Developing Mines**; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing Tools, Boilers, Engines, Etc.



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Complete Machines and Experienced Men sent to any Country or Clime. We have the largest and most varied experience of any firm in this business in America.

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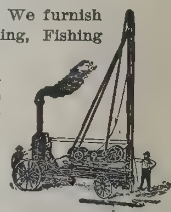

Steam Rigs for 200 350, 600 and 1,000 ft.

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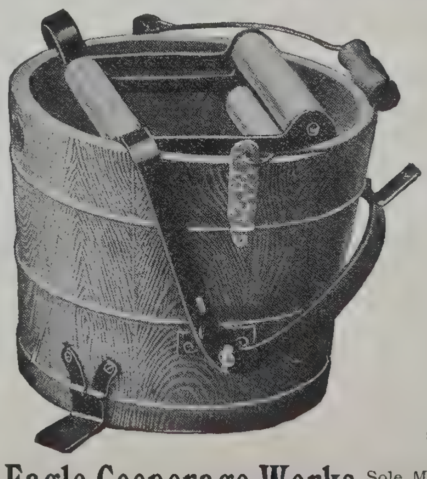

Are used in homes, public buildings, hotels, barrooms, barber shops, stores, churches, schools, clubrooms, office buildings, railroad stations and everywhere mopping up or washing is done.

DIRECTIONS FOR OPERATING:

Put left foot on foothold to hold pail stationary, the other foot on lever; press lever down and rolls will close tightly together; pull mop straight out. Pressure obtained from 0 to 200 pounds, as may be required.

For sale by all hardware dealers, stove and tin stores, grocers, novelty and department stores. Crated for export, weight per dozen, 150 lbs.

Eagle Cooperage Works, Sole Manufacturers and Patentees, **Circleville, O., U.S.A.**

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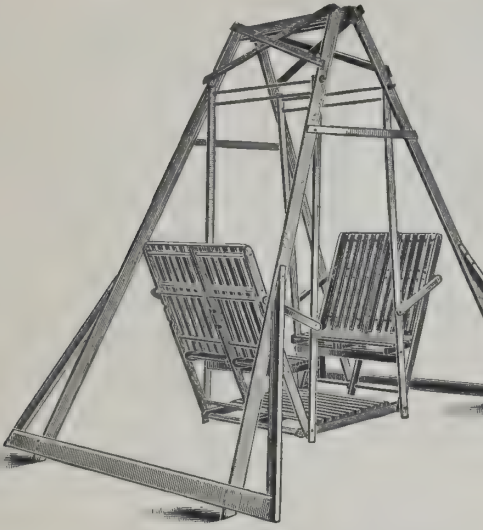
Have been on the market over 46 years, and have successfully stood the test of time.

Our Motto Is: QUALITY in Every Instance.



New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

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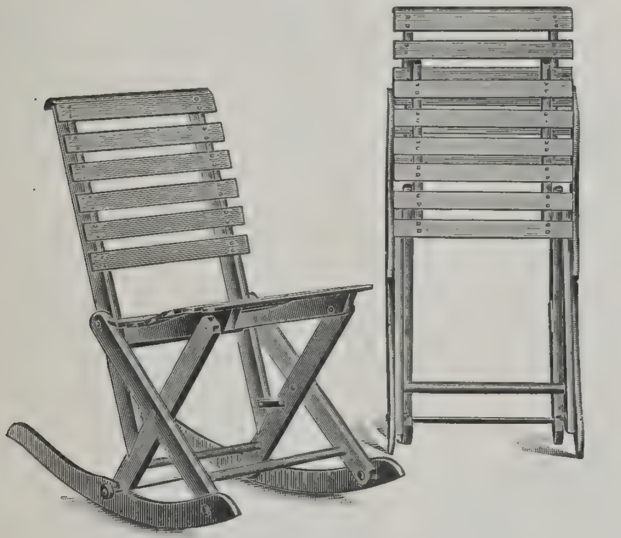

Michael's Folding Rocker.

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Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

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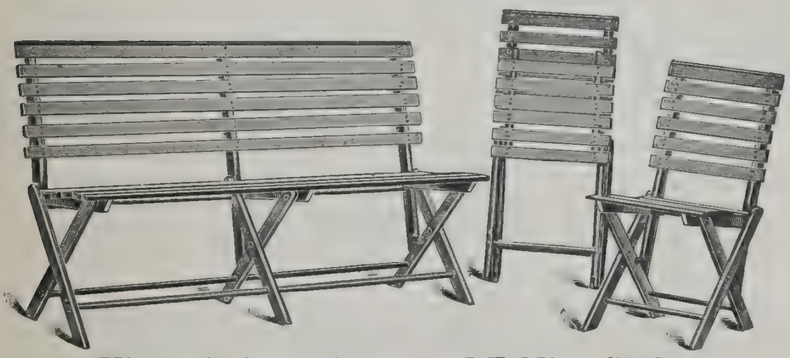

Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

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We also make the Michael Porch and Lawn Reclining Chair.

C. H. MICHAEL MFG. COMPANY,

Cable Address, "Michael." Western Union Code.

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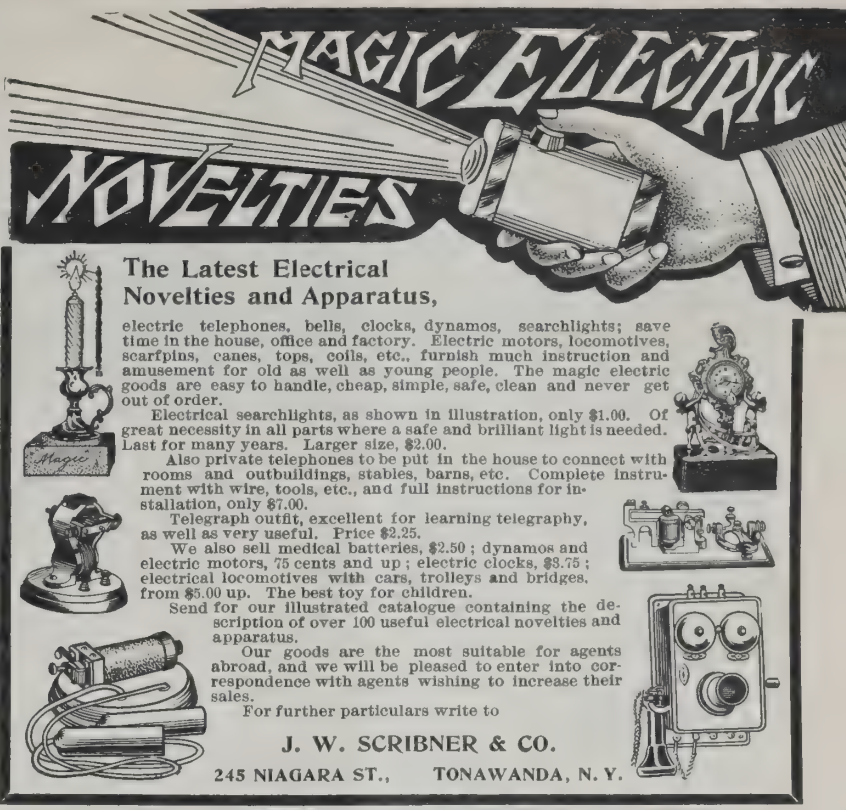

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Magic

The Latest Electrical Novelties and Apparatus,

electric telephones, bells, clocks, dynamos, searchlights; save time in the house, office and factory. Electric motors, locomotives, scarfpins, canes, tops, coils, etc., furnish much instruction and amusement for old as well as young people. The magic electric goods are easy to handle, cheap, simple, safe, clean and never get out of order.

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Send for our illustrated catalogue containing the description of over 100 useful electrical novelties and apparatus.

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IS KING OF ALL BOILER PURIFIERS
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All shipments are made in steel drums, eliminating all leakage. Packages weigh approximately 275, 380, 530 pounds net, billed as half, three-fourths and full-size drums. Foreign trade solicited through exporters, 96-page booklet mailed **free** upon request.

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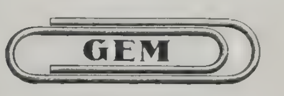

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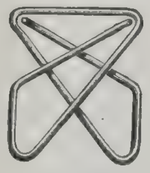

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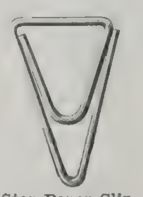

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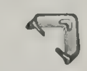

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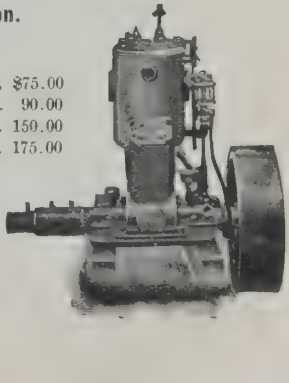

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Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

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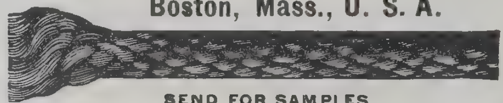
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Ohmmeters,
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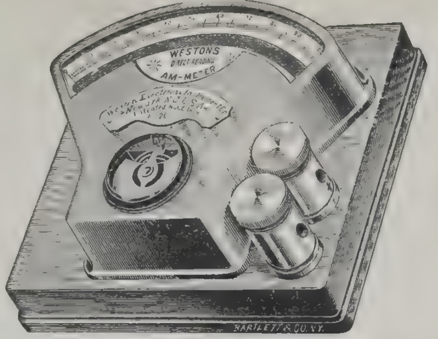
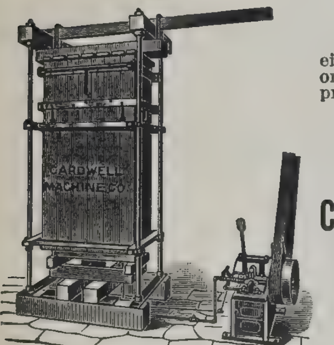


Our Portable Instruments are recognized as **The Standard** the world over. **The Semi-Portable Laboratory Standards** are still better. Our **Station Voltmeters** and **Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

BERLIN—EUROPEAN WESTON ELECTRICAL INSTRUMENT CO., Ritterstrasse No. 88.
LONDON—ELLIOTT BROS., Century Works, Lewisham.
PARIS, FRANCE—E. H. CADIOT, 12 Rue St. Georges.
NEW YORK OFFICE—74 Cortlandt Street.

HYDRAULIC BALING PRESSES.



For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from **$175** to **$350**, according to size.

The Hydraulic Press is the most powerful press made.

COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

Manufacturers of Smoking and Plug Tobacco Machinery.

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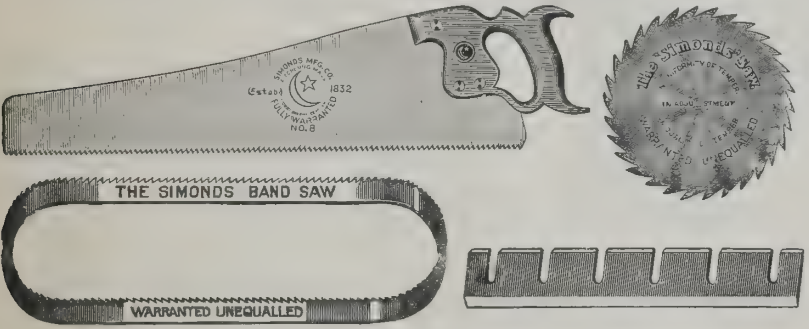
Simonds Saws and Knives

were awarded the **Grand Prix** and **Gold Medal** at the **Universal International Exposition of Paris, 1900.** All competition eclipsed.



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Fitchburg, Mass., U. S. A. **40 Murray Street, New York.**

NASHUA TILL CO.

NASHUA, N. H.
U. S. A.

ESTABLISHED 1859

Style No. 2.

The drawer is made with **Oak or Black Walnut Front,** varnished and polished. The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17x18 inches.

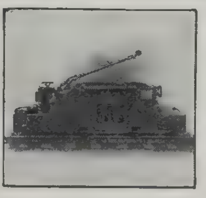
The Lock has 32 Combinations, which can be changed instantly, and CAN NOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. **The Alarm** does not sound except when an attempt is made to open the drawer by an unauthorized person. This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

Indeliba Typewriter Ribbons and Carbon Papers

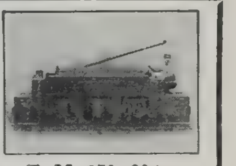
Where known are recognized as the standard of perfection. They are clean to handle, do not smut or soil the work, are long-lasting and are made from the best colors. Send for catalogue. Orders received through any New York exporting house at export rates.

INDELIBA MFG. CO., Inc., Rochester, N. Y., U. S. A.

JEFFREY MINING MACHINERY.

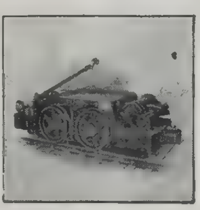


S. M. 10, 2-ton Electric Locomotive.



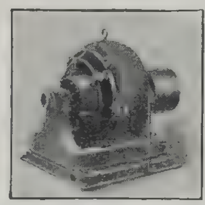
T. M. 150, 20-ton Electric Mine Locomotive.

Generators.
Electric Locomotives.

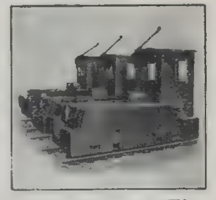


S. M. 15, 2½-ton Electric Gathering Locomotive.

Coal Cutters.
Drills.
Complete Mine Equipment.



150 K. W.



D. M. 40, 7-ton Electric Switching Locomotives.

Our Staple Line Includes Elevating, Conveying, Power-Transmission Machinery. Catalogues Free.

THE JEFFREY MFG. CO.

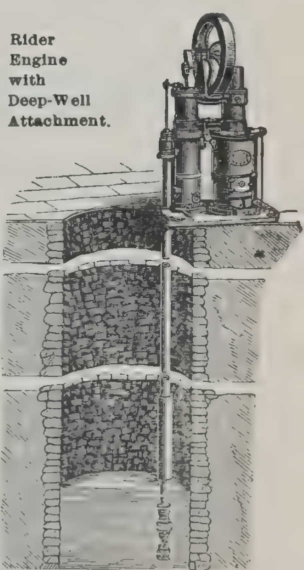
COLUMBUS, OHIO, U. S. A.

A never-failing water supply with absolute safety, at small cost, may be had by using the

Improved Rider Hot Air Pumping Engine

AND

Improved Ericsson Hot Air Pumping Engine.



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Built by us for more than 30 years, and sold in every country in the world. Exclusively intended for pumping water. May be run by any ignorant boy or woman. So well built that their durability is yet to be determined; engines which were sold 30 years ago being still in active service. Send for Catalogue "Z" to nearest office.

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35 Warren Street, New York.
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Teniente-Rey 71, Havana, Cuba.
CHAS. R. COWIE & CO., Agents, Rangoon, Burmah.
BAKER, BAKER & CO., Agents,
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The Tucker Alarm Cash Till.

TUCKER'S
ALARM TILL
No 1.
INDIANAPOLIS, IND.
U. S. A.
Tucker

A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with.

Delivered (½ doz. in a case) free to vessel. Catalogues in English and Spanish.

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Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.

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An ethical nerve and blood tonic, used extensively by physicians and hospitals. Endorsed by leading doctors in the United States.

We offer exclusive agency in foreign countries to import agents of integrity who are able to handle AEG-AN-IURN.

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Steel Advertising Novelties

Button Hooks, Shoe Lifts, Letter Openers, Key Rings, Etc.

Only factory of its kind in the United States. Orders filled through commission houses. Correspondence solicited. Send for Catalogue "A."

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"They Sound Different"

BELL BRAND

STEEL and WOUND

Musical Strings.

For Violin, Guitar, Mandolin, Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

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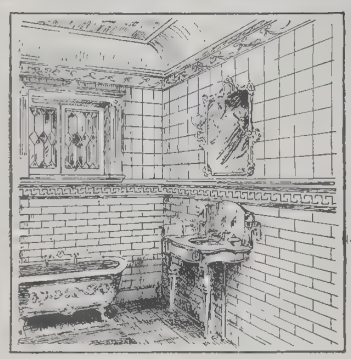

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walls are as necessary as sanitary plumbing.

ENAMETILE

is the best and most sanitary wall. Is made of metal enameled. Like ceramic tile, but better because lighter; does not crack, and costs about **one-third** as much. Hard to detect difference. Plates bedded in cement; no lap joints; no nails. Endless variety of patterns, colorings and sizes. Suitable for wainscoting wall or ceiling.

Write for ART PORTFOLIO, showing Enametile in colors, and Metal Ceiling Catalog showing patterns for all purposes, FREE.

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New Pompadour Roll Comb.

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OUR SPECIALTIES ARE

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MANUFACTURERS AND EXPORTERS OF

Artistic Wood Heels

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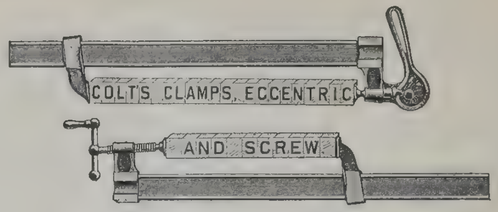
Quick Acting.

Time Saving.



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WATER MOTORS AND FANS, ETC.

Adjustable Every Way While Running.

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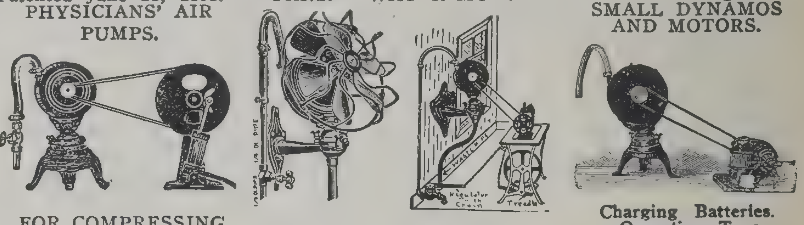
PHYSICIANS' AIR PUMPS.

SMALL DYNAMOS AND MOTORS.



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Look for our name on motors.

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Sample 12-inch adjustable Bracket Fan expressed prepaid ANYWHERE upon receipt of $19 U. S. currency.

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Mustard Pot.
Ruby Glass Lining.
No. 952

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Manufacturer and Exporter of

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Silver-Plated Ware

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Pentucket Wood Heel Co.

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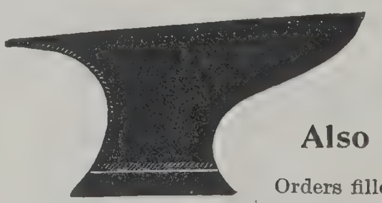

WOOD HEELS.

Also Fancy Covered Heels.

Orders filled through commission houses.
Correspondence solicited.

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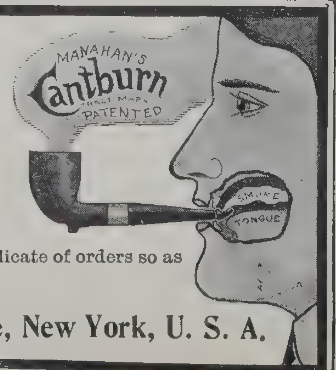
The "PIPE OF PEACE."

Can't burn the tongue. Always sweet, dry and clean.

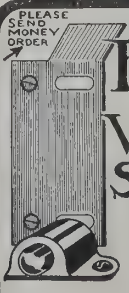
Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes. RELIABLE AGENCIES WANTED.



The Practical Mfg. Co., 1907 Park Avenue, New York, U. S. A.



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TRADE MARK

FRESH AIR LOCK

GIVES PERFECT VENTILATION and SAFETY

Lets fresh air in and keeps burglars out. Automatically locks the window. Any one can attach it. You need it on every window. Your children can't fall out if you use it.

Reliable Agencies Wanted.

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AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

Price, with dates and printing die, as illustrated, or with any other wording that may be desired, **$3.50.**

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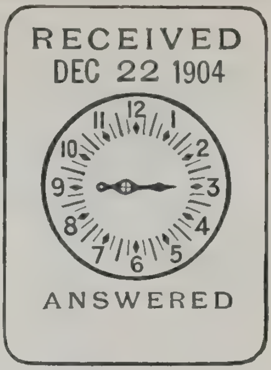
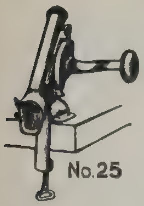
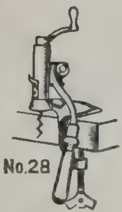
Manufacturer of Glass and Iron Inkstands and Office Stationery.

Send for Catalogue and Export Discounts.

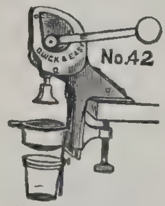




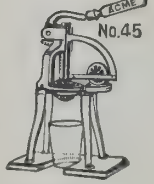
25. Quick and Easy. Cork Puller.



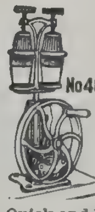
28. Samson Cork Puller.



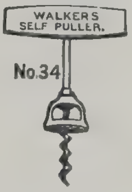
42. Quick and Easy Lemon Squeezer.



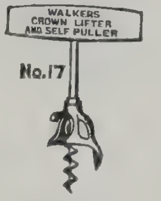
45. Acme Lemon Squeezer.



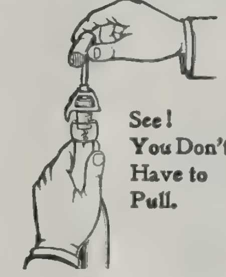
48½. Quick and Easy Shaker.

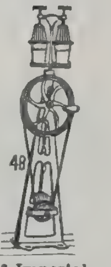


34. Self-Pulling Cork Screw.


WALKERS CROWN LIFTER AND SELF PULLER
No.17

17. Self-Pulling Cork Screw.


See! You Don't Have to Pull.



48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.

THE NEWARK LEATHER WASHER MFG. CO., NEWARK, N. J., U. S. A.

MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

Axle Washers for All Foreign and Domestic Axles. All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses. Correspondence Solicited. Catalogue B on Application

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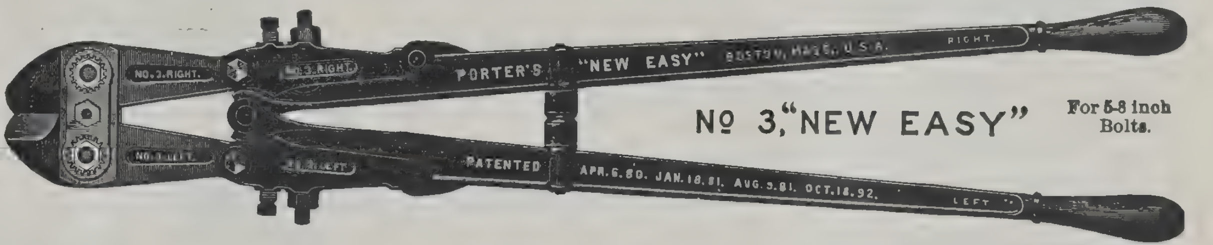
The "NEW EASY" BOLT CLIPPER IS THE BEST.

MANUFACTURED BY

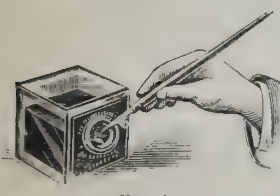
H. K. PORTER,

6 Ashland St., EVERETT, MASS.


No. 2. RIGHT.
No. 3. RIGHT
PORTER'S "NEW EASY" BOSTON, MASS., U.S.A.
RIGHT.
No. 2. LEFT.
No. 3. LEFT
PATENTED APR.6.80. JAN.18.81. AUG.5.81. OCT.18.92.
LEFT

Nº 3, "NEW EASY"

For 5-8 inch Bolts.



No. 7.

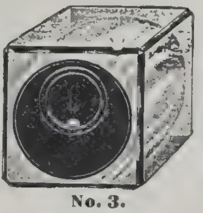
A FEW REASONS WHY

THE GARDNER

Is the Best Inkstand in the world.

The Gardner Inkstand is superior to any other make, for the following reasons: 1—It provides against evaporation, which soon earns its cost by the saving in ink. 2—Its peculiar construction prevents dust and dirt from getting in the ink, allowing it to retain its freshness as long as it lasts. 3—Absolute simplicity—there being nothing to get out of order.

Prices, 65c. to $1.35 each.



No. 3.

THE ROYAL INKSTAND.

In point of simplicity, the ROYAL INKSTAND has no superior. Besides the glass reservoir, it is composed of only three parts—a rubberoid collar and an ink funnel and an arched diaphragm of soft rubber. These parts are all readily removable and easily separated from one another, without tools and without soiling the fingers.

No. 309. Royal, 25c. each.

Very Liberal Export Discounts.

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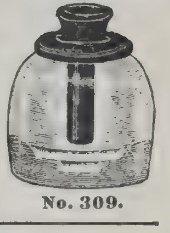
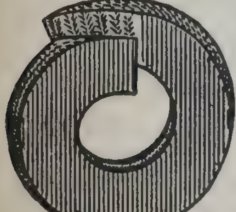


No. 309.



GOULD'S STEAM AND WATER PACKING.

ORIGINAL RING PACKING.

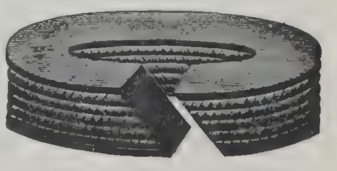
Patented June 1, 1880.—The Original Ring Packing.

IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM

SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.



THE GOULD PACKING COMPANY, EAST CAMBRIDGE, MASS. ALBION CHIPMAN, TREAS.

J. C. F. PHINNEY,

Orders filled through commission houses.
Correspondence solicited.

CUT SOLES,

LYNN,
MASS.,
U. S. A.

BROCKTON LAST CO. BROCKTON. MASS

Brockton Last Co.

Manufacturers and Experters of FINE **LASTS** IN ALL SHAPES AND STYLES,

FOR MEN, WOMEN, YOUNG MEN AND MISSES.

Orders filled through commission houses. Correspondence solicited.

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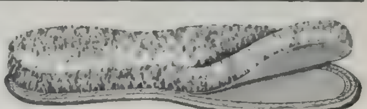
EDWARD M. BLISS,

MANUFACTURER AND EXPORTER OF

LAMB'S WOOL SOLES

AND HAND-CROCHETED WORSTED SLIPPERS IN ALL COLORS AND SIZES.



Ladies in the United States buy the wool soles, crochet and sew the upper onto the sole, thereby making their own slippers for house wear Invaluable for invalids. Orders filled through commission houses, Correspondence solicited.

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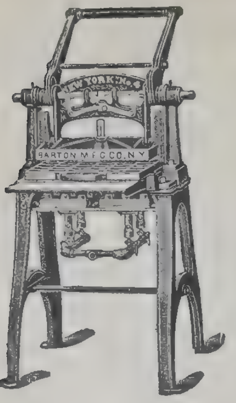

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Can be made with good profit, and without previous experience on our

Patented Automatic Vulcanizer and Mould Press.

Full instructions with each outfit.

COMPLETE MANUFACTURING OUTFITS, $25 TO $100.

Send for Export Catalogue No. 1.

BARTON MFG. CO., 335 BROADWAY, NEW YORK, U. S. A.

Union Computing Machine Company,

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Cable Address: "Computico, N. Y."

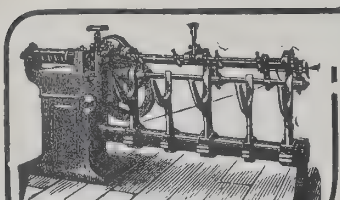
Manufacturers of

Union Cash Registers

Discounts on Application. Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING CHECK AND STRIP PRINTING

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil.); 6.1 cu. ft. (.172 cu. met.). Order direct or through any reliable exporter.



Our Wire Straightening and Cutting Machinery and Riveters

are the original and standard machines improved, and are guaranteed in every respect. Design and workmanship the best; quantity and quality of production unequaled.

SPECIAL AUTOMATIC MACHINERY. We have large and varied experience in designing and building special automatic machinery. All our construction is substantial, combining speed and simplicity, securing the minimum expense for operation and repairs.

We have innumerable drawings and patterns, some of which might be adapted to your needs.

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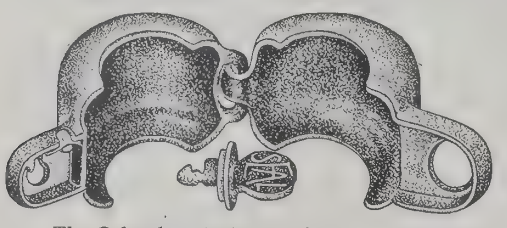

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NO MORE STOLEN GAS OR WATER.

The **Columbus Meter Seal** insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

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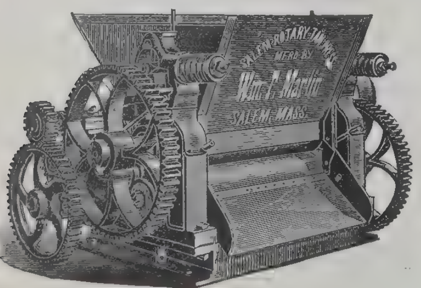

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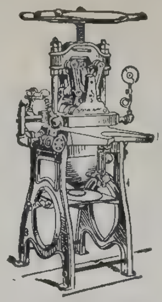
for the pressing of spent tan bark for fuel. Will convert ten cords per day of dripping wet tan into dry fuel, ready to burn under boilers without the use of any other fuel. Orders filled through export commission houses. Circular "M" sent on application.



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FOR THE

Manufacture of RUBBER STAMPS

A PROFITABLE ENTERPRISE.

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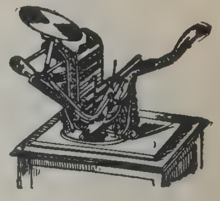

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SOLID RUBBER TYPE.
STEEL DIES AND STENCIL SUPPLIES.

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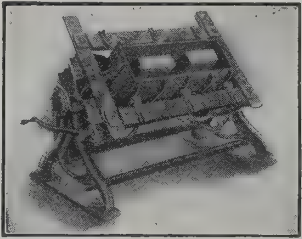

Machine showing rocked position.

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MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

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IMPROVED PATTERNS, NEW DESIGNS, MATERIAL AND WORKMANSHIP FIRST-CLASS.

Arbors ground and run in self-oiling bearings. 6-inch to 24-inch wheels.

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Manufacturers and Exporters of

CANDO Silver Polish

Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

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Francis Reed Company,

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Drills for Hand and Power. Clamp Drills, 2 styles, 4 sizes. Turret Drills. Bench Drills. Track Drills. Drills with 1 to 10 spindles for ⅜-inch holes, with hand or power feed. Nut Tappers with 2, 3 and 4 spindles. Planer Chucks, round and square base, with jaws 6 in. to 30 in. long.

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Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

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OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., ½ lb. or assorted.

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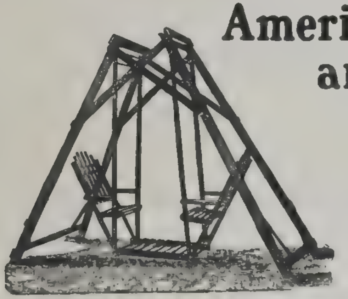

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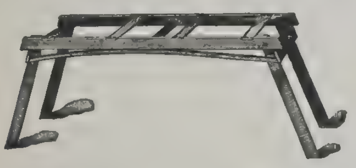

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Manufacturers of

LADDERS of all kinds,
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Send for catalogue and prices. Orders executed by commission merchants.

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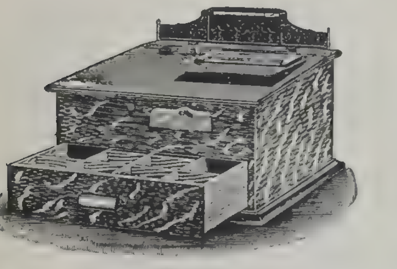

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The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

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AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

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LIBERAL DISCOUNTS TO TRADE.

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IMPROVED MODEL NOW READY.

Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

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Thin Elastic Wheels a Specialty.

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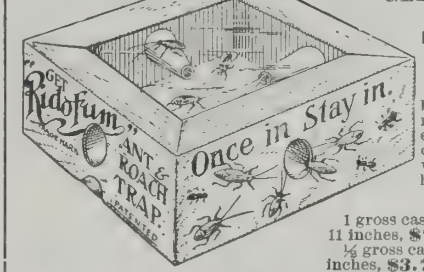
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YOU CAN GET **"RID-OF-UM."**

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A Sanitary Method of Destroying.
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A careful study of the habits of all troublesome bugs usually found in stores, warehouses, hotels, restaurants, and sometimes in private dwellings, enables us to state with authority that when one of any kind of bug gets into the trap, all the rest will follow. Easily killed by dropping into fire or hot water. **Thousands in use.**

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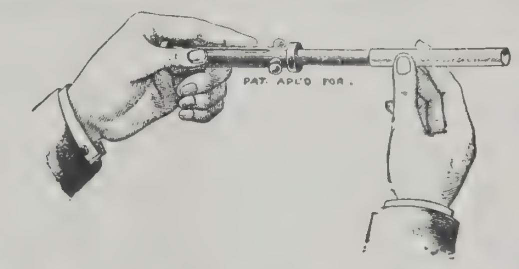
Greatest Invention of the Age for Cigarette Smokers.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It enables smokers to make their own cigarettes by using ready-made tubes which we supply with our machines. Plain or fancy tips can be had. Different grades of tobacco may be mixed to suit the smoker, and, while saving 300 per cent., he smokes at the same time the tobacco that suits his taste best.

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EVERY HEEL IS A SALESMAN.

THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

Every Pair Sells from Two to Fifteen Pair.

It is a RECORD and a FACT that one pair of FOSTER HEELS proved so satisfactory to the wearer that 15 pair have been sold on this one party's recommendation.

"ELASTIC TIP CO., Boston:
"Dear Sirs—I have worn your Foster Rubber Heels on slippery pavements, on ice and snow, and they *positively* do not slip. They are *simply perfect*. Yours truly,
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"MERIT ALWAYS WINS"

And **that's why** people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.

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ALSO PRINTERS' COMPOSING AND MAKE-UP RULES, AND OTHER SPECIALTIES.

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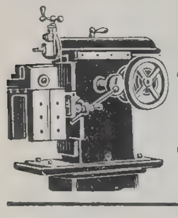

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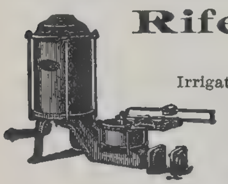
PUMPS WATER BY WATER POWER.



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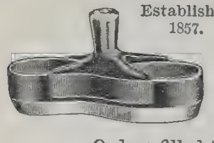

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Most Complete Little Machine Made.

Lights lamps, runs motors, decomposes water, etc. Output twelve watts, wound for any voltage up to ten. Has laminated armature, making most efficient little motor of its kind on the market. Will run on 110-volt circuit. Weight, 4 pounds; height, 5 inches. Send Stamp for Catalogue. **Agents Wanted Everywhere.**

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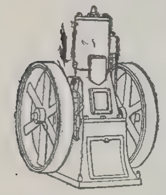

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Safe, Sure, Simple, Reliable, Efficient and Economical.

CHEAPEST POWER ON EARTH

FOR PUMPS, MACHINERY OR ELECTRIC LIGHT PLANTS.

Cheaper and safer than gasolene. No sparker. No igniter. No carburater.

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Does not damage the cork, and easily opens bottles of all sizes and recorks them with equal facility. A child can easily operate it. A nickel-plated shield goes with the best 25-cent puller, so that it can be carried in the pocket as easily as a knife. Orders filled direct or through commission houses. Send for circular.

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Adapted to High Tree, Potato and Truck, or Anything Requiring Spraying.

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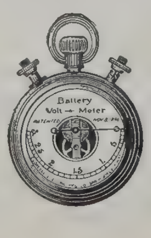

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These saws are warranted in every way. They are backed by an experience of more than half a century. Ask for Catalogue No. 52 and Watch Charm.

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Manufacturers and Exporters of

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All styles and designs made to order. Orders filled through commission houses. Correspondence solicited.

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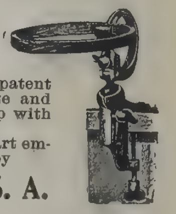

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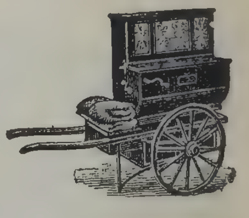

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GUARANTEED TO BE THE BEST.

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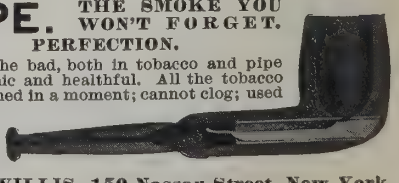
THE SMOKE YOU WON'T FORGET.

SIMPLICITY. UTILITY. PERFECTION.

A pipe that gives all the good, eliminating all the bad, both in tobacco and pipe Nicotine cannot get to the mouthpiece. Hygienic and healthful. All the tobacco burns clean to the bottom of the bowl; can be cleaned in a moment; cannot clog; used with or without a cartridge. It has removable cartridge holder. Never can become strong, as it is lined with pure aluminum, which is non-corrosive and tasteless. A FREE, COOL, SWEET SMOKE ALWAYS. Sent postpaid with a box of cartridges for 75 cents. Discount to dealers.



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Electric Knife Switches and Switchboards, Panel Boards and Cabinets.

Single Break, Double Break, Quick Break, Front and Back Connected Switches, Combination Switches.

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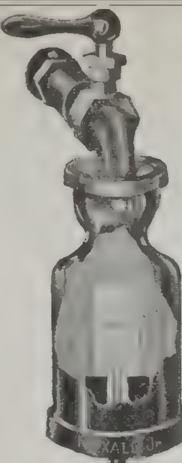

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Top made of Spun Copper, base of Brass, tinned on the inside, nicely nickeled and finished on the outside. The top is fitted with a Special Rubber Tap, so that it will slip easily over the end of any faucet and remain there without further fastening. Also made with a screw top to fit a hose bibb faucet. Size, 2¼ x 5 inches; weight, one pound.

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Printed matter supplied in any language.

We also make larger filters of any capacity, for all places where a filter is desired.

Also the **NOXALL GRAVITY** filter for towns where there are no water works.

Write to-day for Catalogue and discounts.

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Mack's Delicious Soda-Water Powders.

Made by Simply Adding to a Glass of Water.

All Flavors. Packed in Small Wooden Boxes. Retail at 1 Cent Each.

A SODA FOUNTAIN IN YOUR OWN HOME.

Address **W. R. EATON COMPANY,** Boston, Mass., U. S. A

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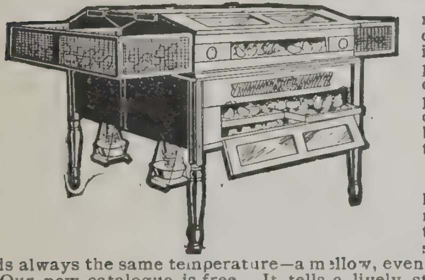
First of all, get this book. No matter what other makers you write for a catalogue, write us, too. We will send you the best book of all—written by the man who has devoted 22 years in perfecting RACINE HOT-WATER INCUBATORS AND BROODERS. When you learn what he knows you will want his machine, we think. The book is our illustrated catalogue—that is why we send it free. But it is more than a catalogue. It tells all that an incubator should be and why. Write to-day for it. Reliable representatives wanted. Prices quoted for export admit of big profits. Address

Racine Hatcher Co., Box 217, Racine, Wis., U. S. A.

OUT-HATCHES ITS COMPETITORS!



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have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage.

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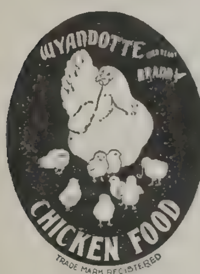

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Wish to call the attention of foreign importers to their

"WYANDOTTE" CHICKEN FOOD,

largely used in the United States by those who raise chickens either for pleasure or profit. It is a cheap, nutritious food; superior to any kind of grain or wet food for young chickens or for poultry. Send a trial order and you will become a permanent customer. Order through any responsible commission merchant. Send for Catalogue "R." Address as above.

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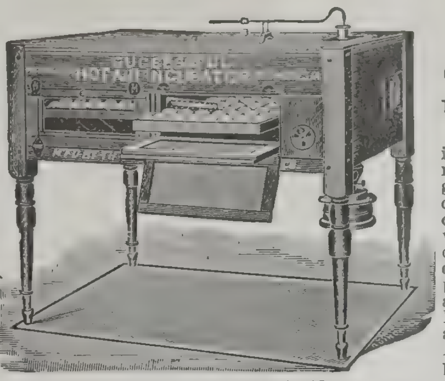

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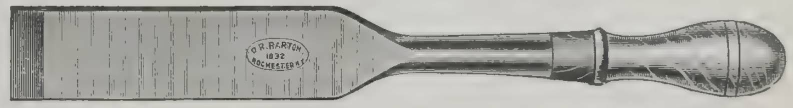

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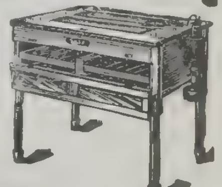

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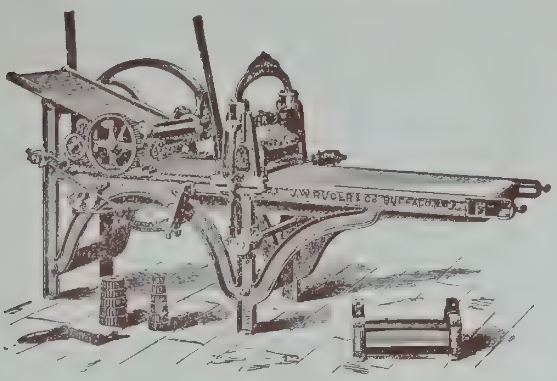

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THE HORSE-POWER SPRAMOTOR.

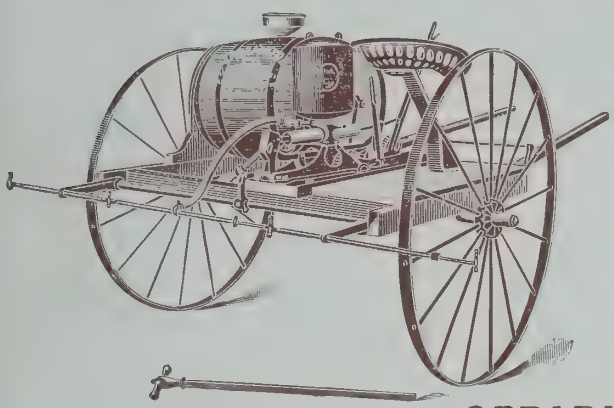

FIG. 62.

Horse-Power Spramotor sprays potatoes from above and below at the same time. Can be worked by hand for stationary work if desired. Capacity, 12 nozzles at work. Prices on application.

WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR.

The Spramotor has been adopted by the Russian, Canadian, Belgian and New Zealand Governments, as well as in the Experimental Stations of Ontario, Manitoba, Quebec, Nova Scotia, British Columbia and many of the States within the United States of America.

NOTE.—The prices quoted, U. S. gold or its equivalent, are for **Export only,** include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

The Fig. 63 Horse-Power Spramotor is intended for the spraying of fruit trees for insects and scab; potatoes to prevent blight and insects; vineyards; the destruction of weeds and for the painting and whitewashing of buildings. Has automatic agitator, hardwood frame and is a first-class equipment throughout. Price, complete, boxed, weight, packed, 560 lbs., f. o. b. New York, **$75.00.**

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Spramotor No. 1, price per dozen............................$166.32

These machines will apply any kind of COLD WATER or OIL PAINT.

SPRAPAINT, a Paint in DRY-POWDER FORM, only requiring the addition of cold water for instant use. Specify "Spramotor" and "Sprapaint" when ordering.

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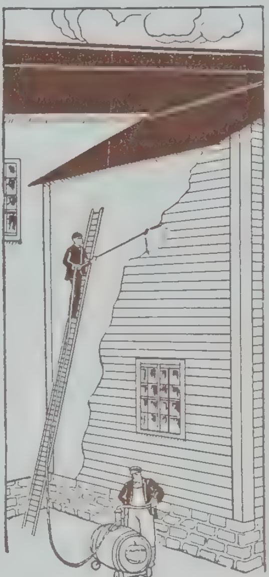

THE SPRAMOTOR CO., Manufacturers, - London, Canada.

Cable Address: "Spramotor," London, Canada. Codes: Directory, A B C 4th, and Western Union.

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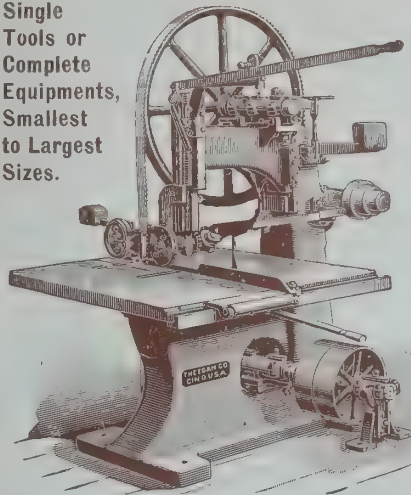

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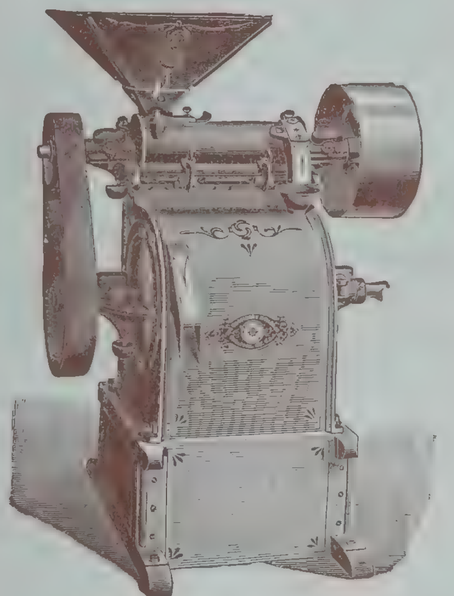
The American Exporter

WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LV. NEW YORK, MAY, 1905. No. 6.

Rice and Coffee Hulling Machinery



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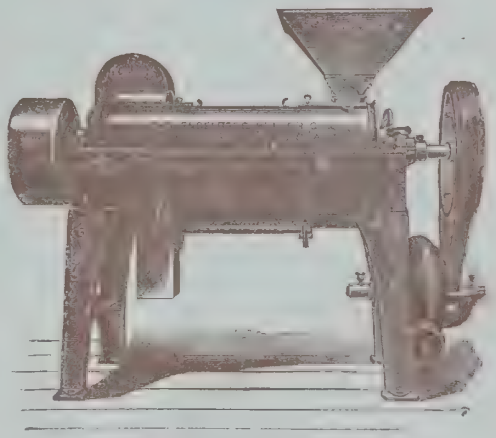

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THE ENGELBERG HULLER COMPANY, P. O. Box B, Syracuse, N. Y., U. S. A.
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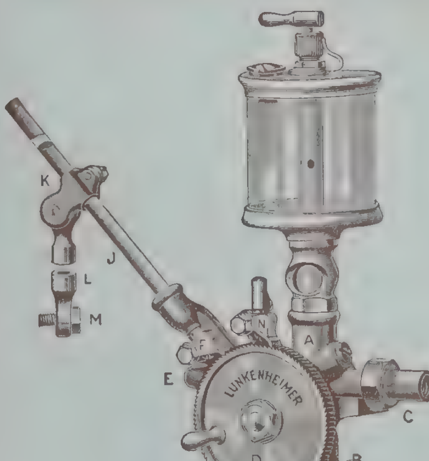

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A Mechanical Oil Pump to be a success should embody the following principles: It should be simple, practical, well made, durable, reliable, absolutely positive, and devoid of claptrap mechanism.

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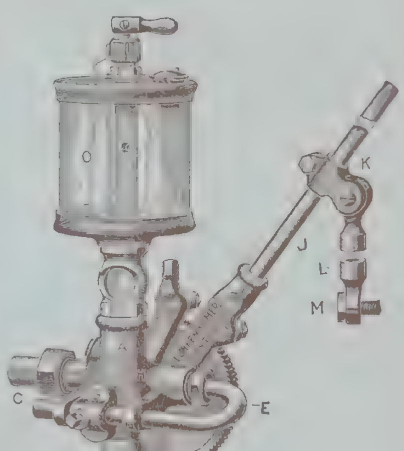

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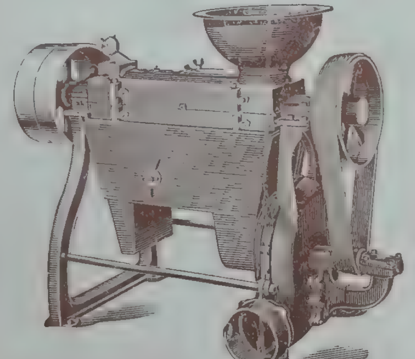

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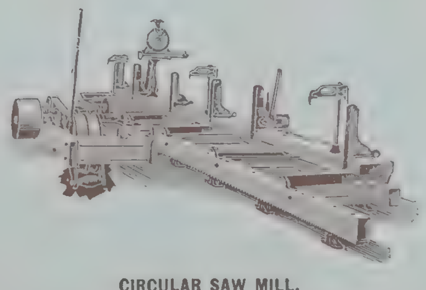

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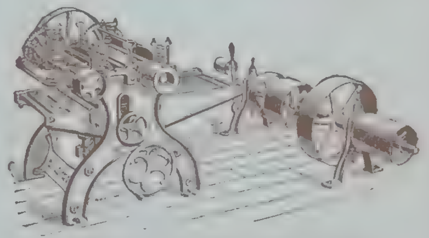

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STEWART HARTSHORN CO.

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E. NEWARK, NEW JERSEY, U. S. A.

STOCK ROOMS:
7 Lafayette Place, New York.
338 to 344 Wabash Ave., Chicago.

ADDITIONAL FACTORIES:
Muskegon, Michigan.
Toronto, Canada.

We Make All Practical Accessories for Shade Rollers.

DIETZ "O. K." Lantern.

In this lantern the globe and perforated plate tilt back out of the way so that free access can be had to the burner to light, trim or extinguish.

It is, without exception, the most convenient arrangement for this purpose on any lantern on the market.

This lantern has heavy tinned steel oil pot, the non-leaking kind, and can be depended on for long service.

It can be lighted, trimmed and extinguished without removing the globe.

All Dietz Lanterns are absolutely safe from taking fire or exploding.

The "O. K." Lantern gives a strong, steady, copious light, and has ⅝-inch burner and No. O globe.

They are packed one dozen in a case, measuring three cubic feet.

List Price, $9.50 per dozen.

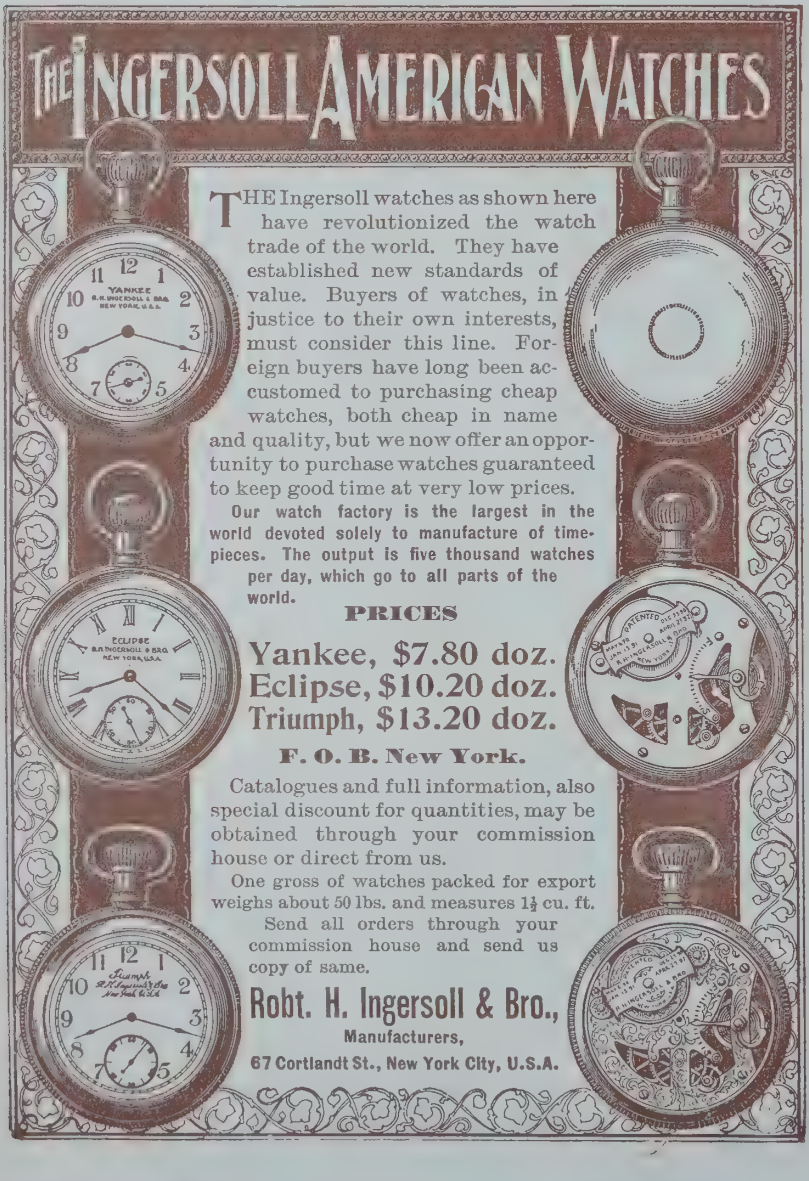
Discount,
50 and 10 per cent.

We issue complete Catalogues in Spanish or English, with Price Lists and Discounts, and are pleased to send them upon request to those interested.

R. E. DIETZ COMPANY,

60 Laight St.,
New York,
U. S. A.

Established 1840.


THE INGERSOLL AMERICAN WATCHES
YANKEE
R. H. INGERSOLL & BRO.
NEW YORK, U.S.A.
ECLIPSE
R.H. INGERSOLL & BRO.
NEW YORK, U.S.A.
Triumph
R. H. Ingersoll & Bro.
New York, U.S.A.
PATENTED

THE INGERSOLL AMERICAN WATCHES

THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of timepieces. The output is five thousand watches per day, which go to all parts of the world.

PRICES

Yankee, $7.80 doz.
Eclipse, $10.20 doz.
Triumph, $13.20 doz.

F. O. B. New York.

Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 1½ cu. ft.

Send all orders through your commission house and send us copy of same.

Robt. H. Ingersoll & Bro.,
Manufacturers,
67 Cortlandt St., New York City, U.S.A.

Arcade Manufacturing Co.

(INCORPORATED 1885).

Manufacturers of

"HANDY" CORK PULLER,
"CHAMPION" CORK PULLER,

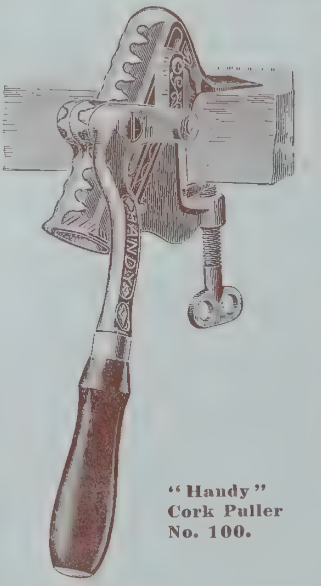
Phoenix Cork Puller, Perfect Lemon Squeezers and "Crystal," "Imperial," "Jewel," "X-Ray," "Royal Pound," "New Home" and "Favorite"

COFFEE MILLS,

AND

"PERFECT" LEMON SQUEEZERS

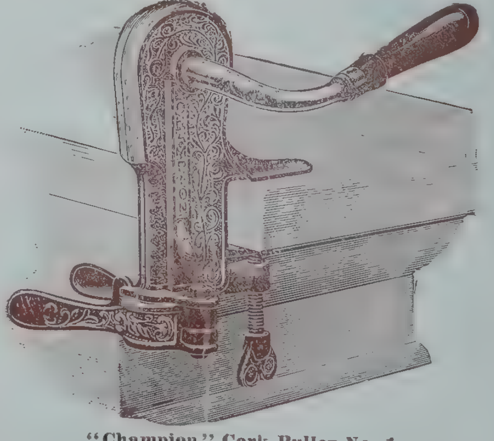
NOTE.—The prices here quoted include boxing ready for transportation and delivered F. O. B. cars at New York City.



"Handy" Cork Puller No. 100.

No. 100. Handy Cork Puller is "A Little Beauty." Is simple, compact and reliable. Can be fastened to a bar or table in the regular way; packed one in a box, twelve in a case. Price per dozen, cased ready for transportation, **$15 80.** Size of case, 13x17½x28 inches. Weight: Gross, 80 pounds; Net, 66 pounds.

No. 1. Champion Cork Puller. The Champion "is abreast of the times," and 'way ahead of all competitors; will quickly and safely draw the cork from any bottle, and as readily recorks the bottle after part of contents has been used—a feature highly appreciated by all users. Made of the best grades of oil-tempered steel. A quick and sure puller and effective recorker. Especially adapted for use in hotels, cafés, clubs, restaurants or wherever a stationary puller can be used. Packed in individual boxes. Each case contains six (6) Champion Cork Pullers. Price per dozen, **$28.10.** Size of two cases, each containing six Champion Cork Pullers, 15½x24½x26 inches. Weight: Gross, 128 pounds; Net, 90 pounds. Discount to the trade. Orders received direct or through export commission houses. Please mail us duplicate of order. NOTE.—Our Catalogue, illustrating and describing the various styles of Hardware Specialties Manufactured by us, mailed postpaid.



"Champion" Cork Puller No. 1.

ARCADE MANUFACTURING CO., - Freeport, Ill., U. S. A.

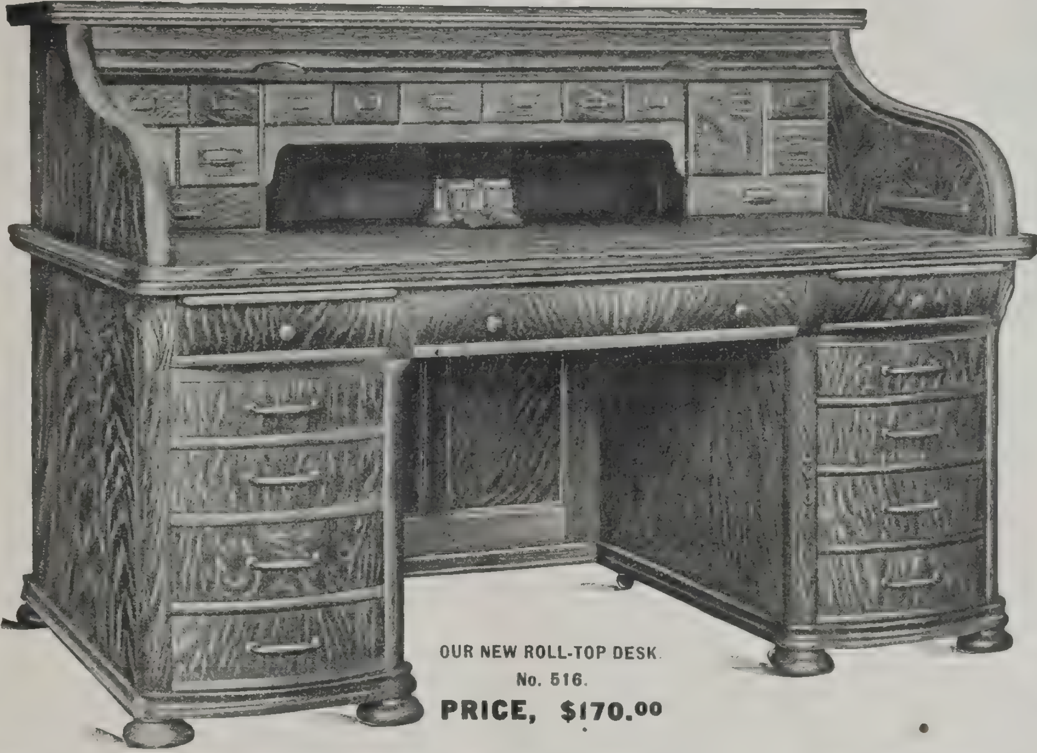
GRAND RAPIDS DESK COMPANY,

MUSKEGON, MICH., U. S. A.

Manufacturers of HIGH-GRADE DESKS OFFICE HOME FOR EXPORT.

ESTABLISHED 1880.

TRADE MARK
GRD
GRAND RAPIDS DESK COMPANY



OUR NEW ROLL-TOP DESK
No. 516.
PRICE, $170.00

ESTABLISHED 1880.

TRADE MARK
GRD
GRAND RAPIDS DESK COMPANY

☞ Send for **Net Export Prices,** which include boxing and delivery F. O. B. New York.

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed postpaid to all parts of the world.

NEW DESIGNS. SUPERIOR WORKMANSHIP. SUPERB APPEARANCE.

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

THE IMPERIAL BOOKCASE

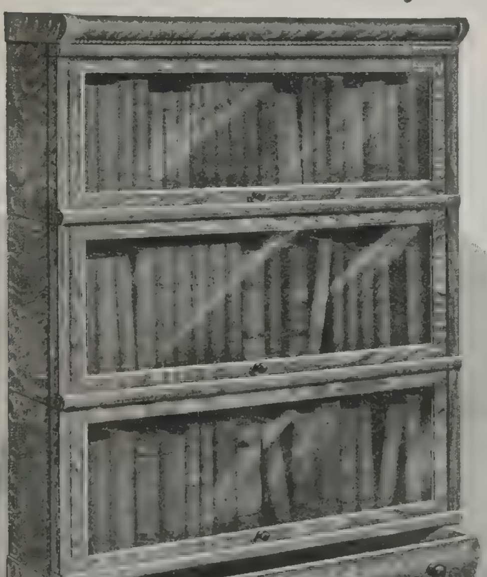
THE IMPERIAL FURNITURE COMPANY,

CAPITAL STOCK, - - - - $200,000.00

Manufacturers of

SECTIONAL BOOKCASES

"The Finest Factory in America." Built Expressly for Export Trade.



THREE-SECTION BOOKCASE.

Set up with top and base, showing drawer. Each section measures (inside) 32 in. in width and 10¼ in. in height. Made of selected quarter-sawed oak, wax or handsome polished finished.

Special Offer for Introduction Abroad.

IMPERIAL BOOKCASES.

TWO Three-Section Bookcases, complete with top and drawer base, as shown in illustration, and

TWO Six-Section Bookcases, complete with top and plain base.

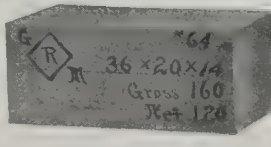
PRICE, f. o. b. New York, - - $50.00

Each Three-Section Bookcase weighs net 80 pounds, gross 120 pounds, and measures 6 cubic feet.

Each Six-Section Bookcase weighs net 140 pounds, gross 200 pounds, and measures 10 cubic feet.

Our catalogues, illustrating and describing the many styles of BOOKCASES manufactured by us, mailed postpaid to all parts of the world.

☞ Orders received direct or through export commission houses. To avoid mistakes, when ordering through the latter, please specify IMPERIAL and mail us a duplicate of order.



IMPERIAL FURNITURE CO.,

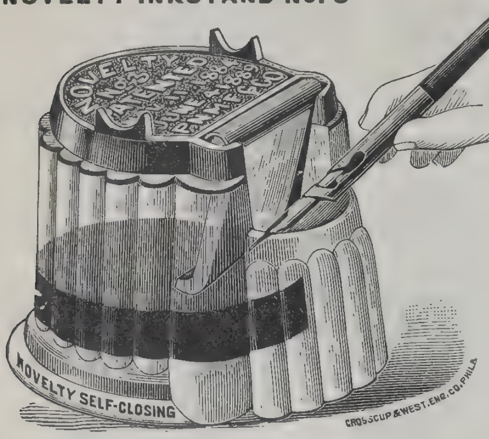
MANUFACTURERS,

GRAND RAPIDS, MICHIGAN, U. S. A.

PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3



American Novelties

NOVELTY (SELF-CLOSING) INKSTAND No. 1 (large), retail, - **75 Cents**

NOVELTY (SELF-CLOSING) INKSTAND No. 3 (small), retail, - **35 Cents**

PATENTED SPECIALTIES FOR EXPORT.

All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of *Sydney, Melbourne, Adelaide, Barcelona* and *Paris,* for novelty, workmanship, finish, simplicity, utility and cheapness.

WHOLESALE PRICE LIST.

Novelty Paper Fastener, $4 doz.; Keystone Paper Fastener, $6 doz.; Original Paper Fastener, $12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, $1.50 doz.; B B C Paper Clip, $1.50 doz.; Balancing Board Clip, $2, $2.25, $2.50 doz.; Upright Paper Clip, $1.50 doz.; Accumulator Bill File, $1.50 doz.; Standard Pen Rack, 1.75 doz.; Spring Folding Pen Rack, $2 doz.; Combination Paper Weight and Clip, $4 doz.; Pocketbook Postage Stamp Holder, $1 doz.; Automatic Fountain Penholder, $1.50 doz.; Novelty Inkstand No. 1, $6 doz.; Novelty Inkstand No. 3, $3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, $4 doz.; Novelty Hunting Knife, $8 doz.; Novelty Pocket Screw Driver, $4 doz.; Artist's Rotary Kit, $5 doz.; Self-locking Door Indicator, $2.50 doz.; Madame Louie Hair Crimper, $2.50 great gross; Novelty Stitched Hair Crimper, $1.50 great gross; Automatic Fisher, $1.50 doz.; Automatic Towel Holder, $1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, $4.80 doz.; Keyring Door Securer, $1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., $1.25 and $1.75 doz.; The Masticator, $1.75 doz.; Duplex Can Opener, 30c. doz.; Universal Wardrobe Shelf Bracket, $1.50 doz.; Double Match Box, Bracket, $2 doz.; Universal Washer Cutter, $8 doz.; Novelty Pen Puller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

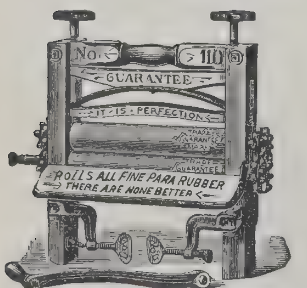
LOVELL MFG. CO.

Erie, Pa., U. S. A.

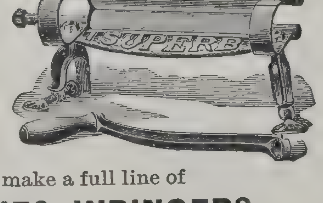
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS
RAT and MOUSE TRAPS.



Send for Catalogue and Prices.



We make a full line of

CLOTHES WRINGERS

for the Export Trade

Delusion Mouse Trap.

Requires no setting.

Rex Trap.

Made in two sizes:
large size for rats;
small size for mice.

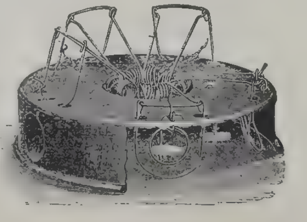
Erie Rat Trap.

Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch."
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker" "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."

Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish.



Lovell's Easy-Setting Metallic Mouse Trap

ESTATE OF

O. M. DRAPER,

North Attleboro, Mass., U. S. A.

MANUFACTURERS OF THE CELEBRATED

O. M. DRAPER

ROLLED-PLATE, FIRE-GILT, NICKEL

CHAINS.

Gents' Watch Chains in all varieties of style and length.
Artistically Designed Ribbon and Metal Fob Chains.
Ladies' Lorgnettes and Necklaces with gold and stone ornamentation.

HIGHEST QUALITY. POPULAR PRICES.
CORRESPONDENCE SOLICITED.

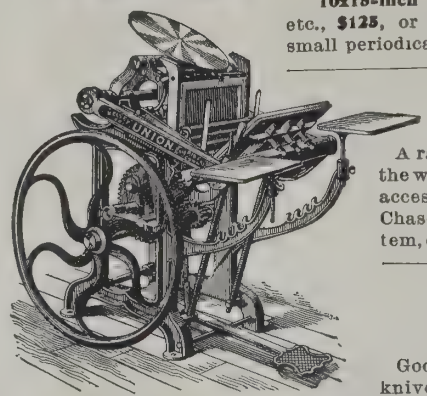
Order through any buying and shipping agent in New York or elsewhere.

CHEAP PRINTING.

Hand presses, easy to use by man or boy. Typesetting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **$125**, or with more type, rules, etc., for small periodical, **$200.**

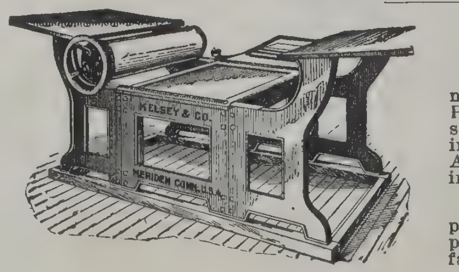


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **$12.00.**


KELSEY & CO.
MERIDEN CONN. U.S.A.

Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches, Price, **$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

SAWYER TOOL MANUFACTURING CO.,

MAKERS OF FINE MACHINISTS' TOOLS.

Improved Try Square
With hardened blade. Furnished in ENGLISH, METRIC and ENGLISH and METRIC graduations.

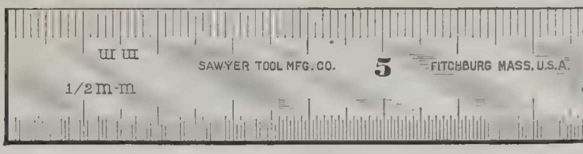
WE SEND THIS WARRANT WITH ALL PRECISION TOOLS.

OUR GUARANTEE.

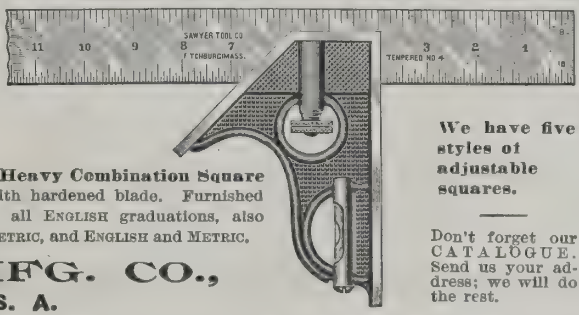
We warrant this tool to be accurate. Any tool made by us found to be defective will be cheerfully replaced upon receipt of the same at our factory.

SAWYER TOOL MFG. CO.,
Fitchburg, Mass., U. S. A.

Our fifty-four-page CATALOGUE, illustrating and describing the various styles and sizes of Fine Machinists' Tools made by us, mailed postpaid.


1/2 m-m
SAWYER TOOL MFG. CO.
5
FITCHBURG MASS. U.S.A.

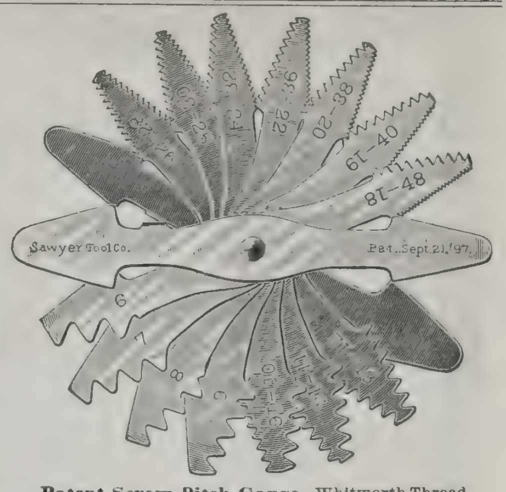
Spring Tempered Metric Rules.—These rules are of standard widths and thicknesses; graduated in millimeters and half millimeters, or when desired will be furnished in English and Metric graduations. All lengths in stock.



Heavy Combination Square with hardened blade. Furnished in all ENGLISH graduations, also METRIC, and ENGLISH and METRIC.

We have five styles of adjustable squares.

Don't forget our CATALOGUE. Send us your address; we will do the rest.


Sawyer Tool Co.
Pat. Sept. 21, '97.

Patent Screw Pitch Gauge—Whitworth Thread.

This gauge has the blades pivoted in the middle with the pitches cut on the tapered edges of either end.

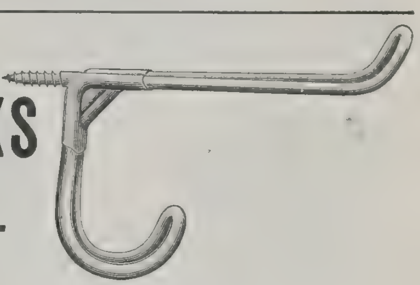
The shape of the blades of this gauge is such that they can be used in very small holes. It is compact and has the following pitches; 6, 7. 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 38, 40, 48.

SAWYER TOOL MFG. CO.,

FITCHBURG, MASS., U. S. A.

BRADLEY

SHELF BRACKETS and COAT AND HAT HOOKS



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SAMPLE ASSORTMENT OF BRACKETS COSTS ABOUT $15.00.

Weigh about 200 pounds. Measure 42 x 23 x 18 inches.

HOOKS, No. 15, JAPANNED, 12 gross in case. Weigh about 130 pounds. Measure 31 x 14 x 13 inches.

Order a "sample assortment" of Brackets and a case of Hooks.

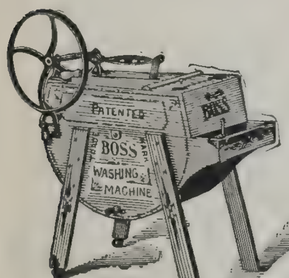
ATLAS MANUFACTURING CO., NEW HAVEN, CONN., U. S. A.

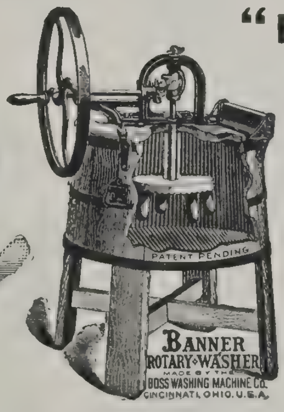
The Horse Whip Co. Manufacturers and Exporters of Whips

The ZEBUAZO Whip. It stands, swings and wears like WHALEBONE.

Orders Filled Through Commission Houses. Correspondence Solicited.
Illustrated Catalogue Furnished on Application.

Westfield, Mass., U. S. A.





"BOSS" Line of Clothes Washing Machines

Will cleanse any fabric quick and without the slightest injury. These machines are a

NECESSITY WHEREVER CLEAN CLOTHES ARE DESIRED.

It will pay you to secure our catalogue and price-list before placing your order elsewhere.

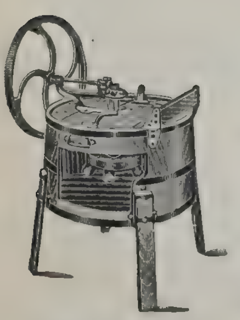
MANUFACTURED BY

BOSS WASHING MACHINE CO.

CINCINNATI, OHIO, U. S. A.

Largest Manufacturers in the World of Clothes Washers.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."



GUARANTEE WASHER.

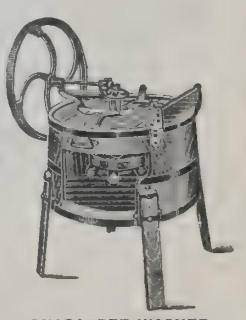
THE Guarantee

FOUR-STROKE ROTARY

Washing Machine

Just placed upon the foreign and home markets, combines the **Latest Improvements** in **High-Speed, Ball-Bearing Washing Machines** and will accomplish all that is claimed for or required of any washing machine **and more.**

NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.



GUARANTEE WASHER.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order FOUR NOW. Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.
NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

The Improved United States Cream Separator

is a machine that separates milk from cream as soon as the milk is taken from the cow, and it holds the **World's Record** for performing this separation most thoroughly.

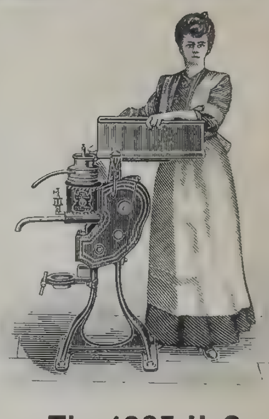
The foreign demand for this machine is rapidly increasing, not only because of its superlative merit, but also because it is widely advertised in countries such as New Zealand, Australia and South Africa, where dairying is rapidly developing. It is the most popular machine for the export trade, because of its very strong and simple construction, to which is due its extreme durability—a most necessary quality for the foreign trade.

PRICES OF HAND SIZES FROM $50.00 TO $165.00.

Illustrated catalogues sent postpaid for the asking. Orders received through export commission houses. (In each case duplicate order should be mailed to us.)

THE VERMONT FARM MACHINE CO., Bellows Falls, Vt., U.S.A.

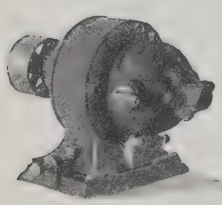
Cable Address: Vermonfarm, Bellows Falls. Lieber's, Western Union Int. and Commercial Codes.



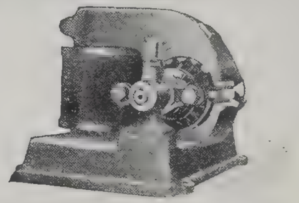
The 1905 U. S.

ELECTRICAL APPARATUS FOR ALL PURPOSES

SPECIAL OFFERS FOR EXPORT ONLY.



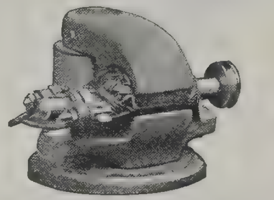
Type "R," Sparking Dynamo.
Price, each, - $15.50



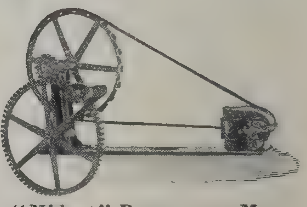
Type "B," Dynamo or Motor.
Price, each, - $26.50

The prices here quoted are packed, ready for shipment abroad, and delivered f. o. b. New York, Boston or Philadelphia.

☞ Our Bulletins, illustrating and describing the various styles of **Electrical Experimental Apparatus** made by us, mailed postpaid.



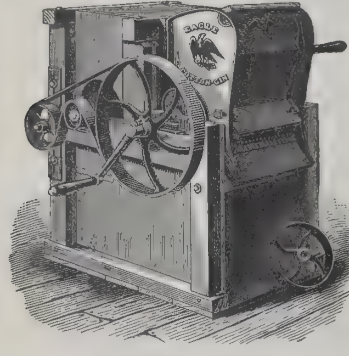
"Midget" Dynamo or Motor.
Price, 6, - - $18.00



"Midget" Dynamo or Motor, with hand power.
Price, 6, - - $34.50

THE ELBRIDGE ELECTRICAL MFG. CO., Elbridge, New York, U. S. A.

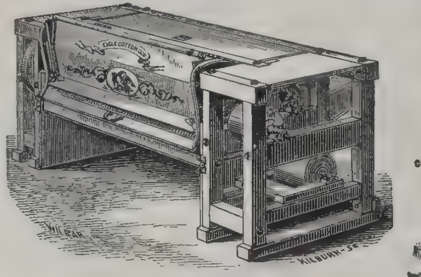
EAGLE COTTON GINS.



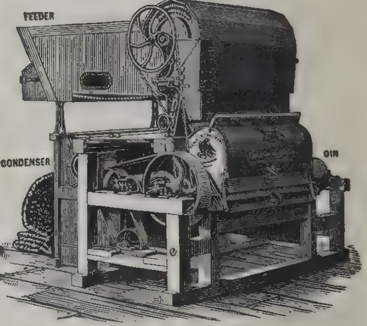
Hand Gin.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



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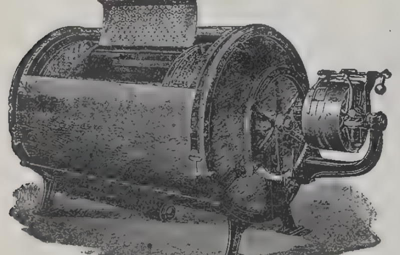

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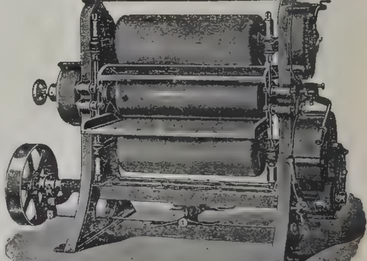

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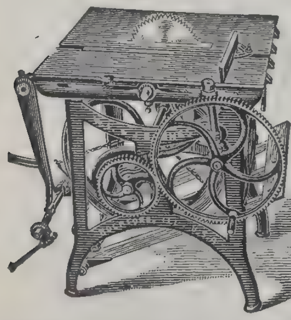

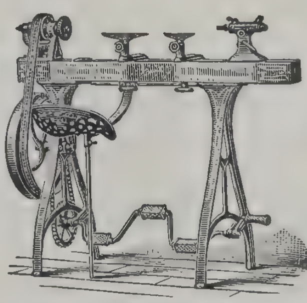

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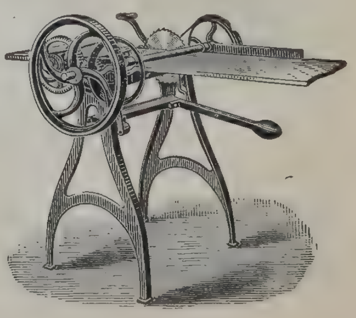

Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

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Price per gross, small size.......... 7.50
Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.

GRIFFIN
PARISIAN DRESSING
A BLACK DRESSING FOR LADIES & CHILDRENS SHOES
MADE OF MOROCCO, KANGAROO, DONGOLA, PEBBLE AND STRAIGHT GOAT, GLAZED AND FRENCH KID.
Griffin Manufacturing
NEW YORK, U.S.A.
PARISIAN DRESSING. A BLACK DRESSING FOR LADIES SHOES.

We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes. Price, per gross, $8.00. Discount, 10 per cent.

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Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.

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FOR BOX CALF, VICI KID, CORDOVAN, KANGAROO, GLAZED KID, GOAT AND ALL BLACK DRY LEATHER
GRIFFIN MFG
MANUFACTURING
82 CORTLANDT
NEW YORK
U.S.A.

Price per gross, large size..........$15.00
Price per gross, small size.......... 8.00
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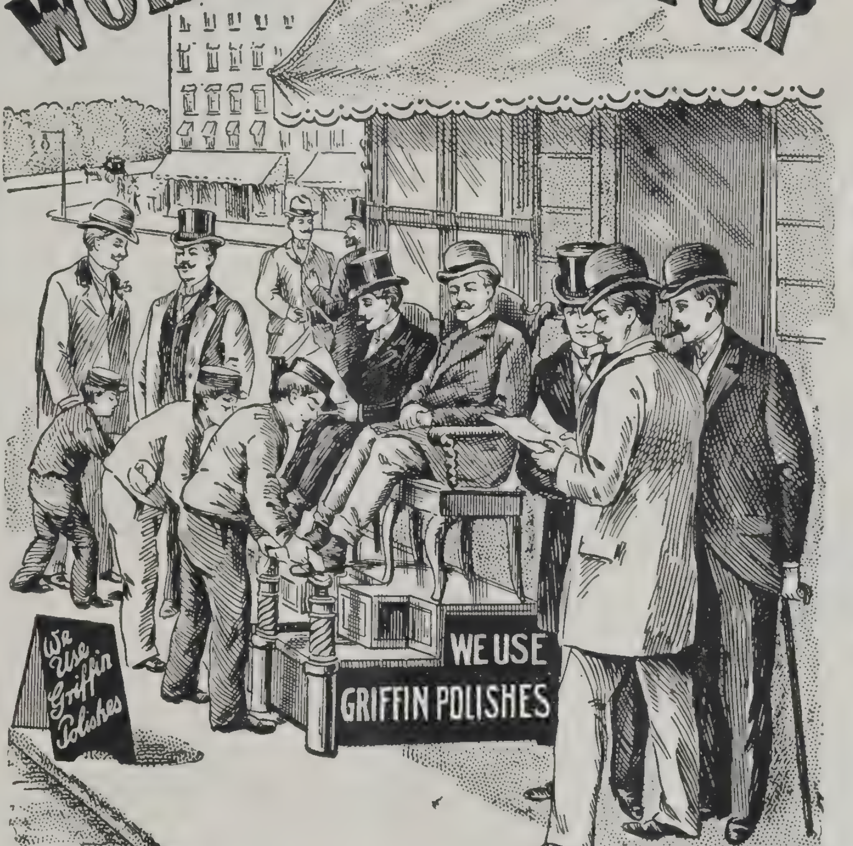

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Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty it should first be cleaned with Griffin Russet Leather Cleaner.

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It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

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Discount, 10 per cent.

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An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

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SNOW WHITE
FOR CLEANING AND REWHITENING WHITE SHOES MADE OF CANVAS, BUCKSKIN AND SUEDE.
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For cleaning and rewhitening white shoes made of canvas, suede and buckskin.

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TRAVELERS OUTFIT
FOR Beautifying and Polishing Gentlemen's and Ladies' Shoes
GRIFFIN
GRIFFIN STERLING POLISHING PASTE
GRIFFIN MFG Co

Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, Franch Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross..........................$18.00
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NONE BETTER MADE AT ANY PRICE.

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High-Grade Shoe Polishes.

GRIFFIN M'F'G CO.,

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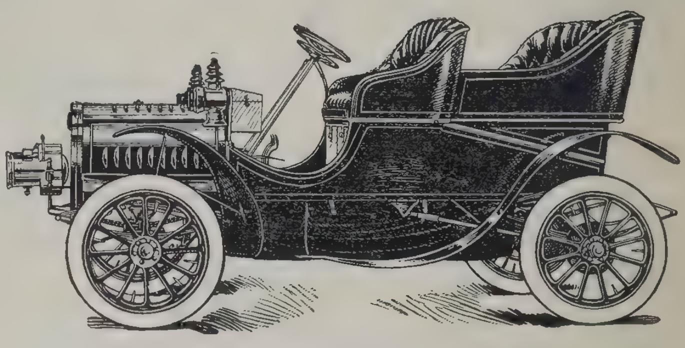

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$1,250 Complete with brass side, tail and gas headlight, brass horn, drop-forged wrenches, oilers, pump and repair kit. Other models, $750, $850, $1,350, $2,000, $3,000.

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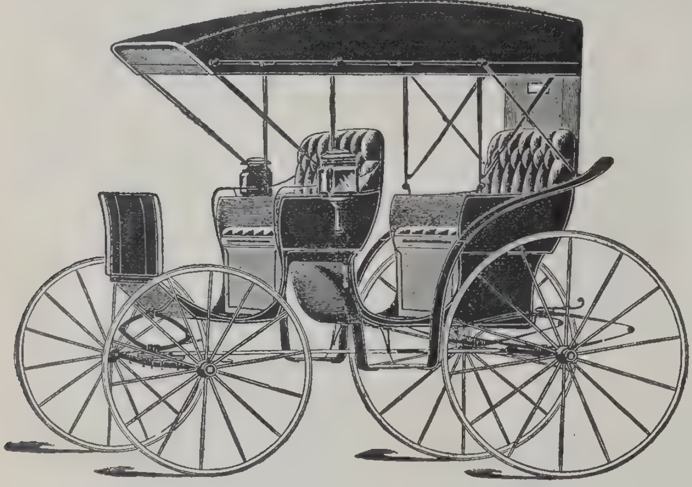
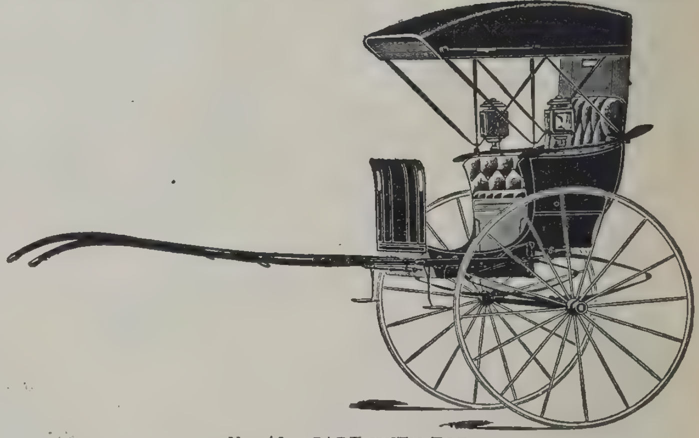


No. 2003. THREE-SPRING CARRIAGE.
This is a large, roomy, comfortable carriage, built throughout very strong and substantial.

We Manufacture 90 STYLES OF VEHICLES, 65 STYLES OF HARNESS.



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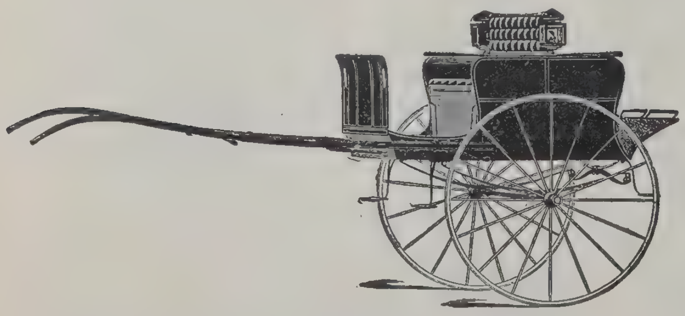

No. 15. CART FOR TWO OR FOUR PASSENGERS.
Is perfectly balanced for either two or four passengers by sliding seat forward or back. Guaranteed in every particular first class. Free from horse motion.

Our general catalogue, fully describing complete line of vehicles and harness, mailed on application. Address

No. 3001. HEAVY CORNING BUGGY.
Guaranteed to give perfect satisfaction over roughest, poorest roads.

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The American Exporter

[Founded by Root & Tinker, 1877],
with which is incorporated
THE AMERICAN MAIL AND EXPORT JOURNAL.
[Founded by Howard Lockwood & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - - Publisher
120 Liberty Street, New York.

Published on the 1st of each month.
Subscription, to any part of the world, $2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

ANNOUNCEMENT TO THE FRIENDS OF "THE AMERICAN EXPORTER."

AFTER a service of nearly thirty years devoted to the upbuilding of The American Exporter, I feel that I am justly entitled to a rest, a change of scene and relief from the responsibilities of active control. I have, therefore, sold and transferred the property to Mr. W. J. Johnston, an accomplished leader in the field of technical and trade journalism, under whose management both the English and Spanish editions of The American Exporter will hereafter be published. Consequently, while I shall continue to take a deep personal interest in the publication under its new management, I shall no longer appear as a principal in the publication of journals relating to foreign trade.

This announcement is made with mingled feelings of pride and regret. In the conduct of The American Exporter it has been my good fortune to be closely identified with the marvelous development of the export trade of the United States, which during the last three decades has attracted the attention of business men throughout the world. To have worked shoulder to shoulder with the leaders of that splendid movement, to have helped in some degree in establishing closer and friendlier relations between American manufacturers and foreign importers, and to have been recognized at home and abroad as an advocate of the purposes and influences which have advanced the United States to a dominant place in the trade of the world, are the proudest experiences of my business career.

On the other hand, the severance of my relations with the enterprising and far-sighted pioneers of international commerce, whose generous support and counsel have so largely made The American Exporter what it now is, amounts to little less than a personal sorrow, which words cannot adequately express. To them and to all its other patrons I owe a debt of gratitude beyond my power to repay.

The regret that I feel in bidding these friends a business goodbye is, however, tempered by the knowledge that The American Exporter passes under the control of a gentleman whose ability, experience and business methods afford assurances of its continued value and usefulness. He knows its field and its mission; he appreciates the unfolding opportunities for American trade throughout the world, and he may be relied upon as an energetic, faithful and intelligent supporter of all legitimate policies which may be employed to advance the interests represented by the publication. I can bespeak for Mr. Johnston no better fortune than the continuation of the support and cooperation so abundantly extended to me. He can ask nothing more, and I am confident that he will deserve nothing less.

John C. Cochran

BY WAY OF INTRODUCTION.

SINCE the individuality and ideals of the publisher so largely fix the standard and guide of the destiny of a publication, a few remarks regarding the new management of The American Exporter may be considered timely. It is fitting that such remarks should come from those who have been associated with Mr. Johnston on other publications, and who may, therefore, be presumed to be qualified to speak.

In actively entering the field of export journalism, Mr. Johnston has a full appreciation of the responsibilities thus assumed. At the same time, there is no other branch of class journalism which is more attractive to him, and none for which he is better equipped by experience and familiarity with present conditions and future possibilities.

For many years he has been a close student of foreign trade and a firm believer in the great opportunities that exist for the sale of American goods abroad. As many manufacturers are aware, he believes that the value of our exports can be largely increased and he has already done much in a practical way to cooperate with them to this end.

There is scarcely a country to which American manufactures are exported that Mr. Johnston has not visited in person. In addition to numerous trips to Great Britain, Germany, France, Holland, Belgium and Scandinavia, he has visited Austria, Italy, Spain, and practically every other part of the Continent of Europe. In Asia, he has traveled extensively in the Philippines from Luzon to Sulu, also in Japan, Formosa, China, Korea, the Straits Settlements and India, including Burmah. He has also visited the Hawaiian Islands, as well as Cuba, Porto Rico, Barbados and other West Indian Islands. So far as the American continent is concerned there are few States or countries with which he is not familiar.

In each of these markets by keen observation and intelligent interviews with import merchants and others familiar with local conditions, he has been able to get at first hand the point of view of the leading dealers and large consumers. His reputation is a sufficient assurance that he will in addition gather about him men thoroughly conversant with foreign trade conditions.

As is well known, Mr. Johnston was the founder and for more than twenty years the publisher of *The Electrical World*, and afterward president of *The Engineering and Mining Journal*. In connection with these publications, and as the present publisher of the *Mining Magazine*, he has had unusual facilities for becoming familiar with the different conditions affecting American industries.

The American Exporter will, therefore, be able to answer, on the one hand, inquiries of its readers regarding American products; and, on the other, to furnish practical information and suggestions to American manufacturers interested in developing their trade in any part of the world.

The American Exporter will continue to be an independent and impartial export journal. No one connected with it is engaged in any business except publishing, nor interested in any export commission house, export association, manufacturing concern, selling agency or other enterprise; hence there is no outside interest to serve.

In its editorial management, the best traditions of trade journalism will continue to be observed. Any changes that may hereafter be inaugurated will be in the nature of an advance. As in former publications, Mr. Johnston will maintain the editorial management as separate and distinct from the business management.

The American Exporter, now in its twenty-ninth year, is the pioneer publication devoted to building up a world-wide demand for American goods. If, *hereafter*, with a larger staff and laid out on broader lines, the publication shall be more energetic and vigorous, this will not involve any change in the high aims, thorough independence and conservative management which have always marked its progress and contributed to its influence and stability.

THE NEW BUREAU OF MANUFACTURES.

By J. Hampton Moore, Chief of the Bureau.

THE Bureau of Manufactures is the latest assurance of the Government's interest in commerce and industry. It is one of the new bureaus created by the act of February 14, 1903, the other being the Bureau of Corporations, which has been attracting popular interest under Commissioner Garfield. Provision for the Bureau was made in the organic law of the Department of Commerce and Labor, at the behest of the commercial and manufacturing interests of the country. They wanted to have done for the extensive manufacturing products of the United States what for forty years the Government, through the Department of Agriculture, had been doing for the country's agricultural products.

The scope of the Bureau, as set forth in the act which created it, comprehends a work of no mean magnitude:

"There shall be in the Department of Commerce and Labor a Bureau to be called the Bureau of Manufactures, and a chief of said Bureau, who shall be appointed by the President, and who shall receive a salary of $4,000 per annum. There shall also be in said Bureau such clerical assistants as may from time to time be authorized by Congress. It shall be the province and duty of said Bureau, under the direction of the Secretary, to foster, promote and develop the various manufacturing industries of the United States, and markets for the same at home and abroad, domestic and foreign, by gathering, compiling, publishing and supplying all available and useful information concerning such industries and such markets, and by such other methods and means as may be prescribed by the Secretary or provided by law. And all consular officers of the United States, including consuls-general, consuls, and commercial agents, are hereby required, and it is made a part of their duty, under the direction of the Secretary of State, to gather and compile, from time to time, useful and material information and statistics in respect to the subjects enumerated in section three of this act in the countries and places to which such consular officers are accredited, and to send, under the direction of the Secretary of State, as often as required by the Secretary of Commerce and Labor, reports of the information and statistics thus gathered and compiled, such reports to be transmitted through the State Department of the Secretary of the Department of Commerce and Labor."

The census of 1900, taken two years before the Department of Commerce and Labor came into existence, fixes the valuation of manufactured products of the United States at more than $13,000,000,000—that is, three times as much as the products of agriculture for the same year. In view of these figures, the importance of a Bureau for the promotion of manufactures, operating under a Department whose Secretary sits in the Cabinet of the President, may be fairly appreciated.

This movement is the result of the agitation of a century of restless and increasing trade and commerce. The various Departments—State, Treasury, Army, Navy, Justice, Post-Office, Interior, and more recently, Agriculture—had all been objects of governmental encouragement for years. Commerce and manufactures, however, up to a little more than two years ago, had never been represented at the nation's council table. So extraordinary had been our commercial and industrial development that this statement, of itself, is remarkable. The great producing power of the country, the inspiration of a nation's material progress, which, with agriculture, constituted the basis of all national wealth, was the last to be chosen for that oversight and encouragement embodied in the law's recognition of a representative at the "seat of Government." This recognition anxiously recommended for agriculture by President Lincoln, but not accorded fully until February 9, 1889, was actually withheld from the greatest of American producers, the manufacturing industrialists, until the nation had startled the world with its genius for domestic achievement and had demonstrated its right to rank with the first of the powers of the world.

Agriculture has been developed and improved and the standard of living has been raised wherever the influence of its fostering Department has penetrated. Its seventeen years of well-directed activity have become an essential part of American progressive history, gratifying alike to the industrious workers on the farm and in the mill. Hence, it is all the more surprising that the onward march of creative industry should not have been officially accepted in its full significance, until all the great nations had been compelled to take notice of the wonderful progress of American manufactures, and prepare for the inevitable competition for the world's markets.

In creating the Department of Commerce and Labor, Congress provided for a centralization of effort on the part of the Statistical and Commercial Bureaus of the United States Government. The Department has been in operation a little more than two years and is now beginning to take up the serious work of developing United States commerce abroad. While the nation exports more than it imports, there is every reason to believe that a much greater volume of business can be transacted with foreign countries if only proper agencies are employed. Individual effort has been and is largely at work in the various nations of the world, and to it much of the success of the friendly commercial relations already established is to be attributed.

So far as the new Bureau of Manufactures of the Department of Commerce and Labor is concerned, it can be said that every possible effort to improve upon existing conditions will be put forth. All the great nations, with pardonable interest in the welfare of their own people, are doing the best they can to attract the attention of buyers for their manufactures. The manufacturers of the United States have been enjoying wonderful progress at home and have not perhaps given as much attention to the development of foreign markets as the quality and worth of their products would justify.

It is tolerably well known what the other nations are accomplishing in commercial endeavor beyond their own boundary lines, and there is ample machinery under Government control, if properly directed, to improve upon the information now in hand. How to direct the forward trade movement will be the principal problem confronting the Department of Commerce and Labor. That the manufacturers and merchants of the United States approve of some movement is plainly shown by the fact that it was they who insisted upon the creation of the Department. Though it will take time to bring the governmental agencies into full play for the common benefit, it may be safely asserted that the practical work is about to begin and that it will be prosecuted with all the energy characteristic of American business men.

It is too early to speak of specific methods, but assurance may be given that no stone will be left unturned to improve the friendly relations now existing between the nations and that everything possible will be done to win the confidence of the countries and the peoples with whom it is proposed to deal.

THE DIPLOMACY OF COMMERCE.

By W. L. D. O'Grady, City Clerk's Office.

WHEN Sinbad the sailor traversed lands and seas, as is illuminatingly depicted in the Arabian Nights Tales, the diplomacy of commerce had begun. There is no doubt that in the so-called Dark Ages the diffusion of the arts and sciences was brought about by the adventurers of commerce.

To-day universal peace and prosperity can improve on these Old-World arrangements only by the multiplication and exploitation of new methods and appliances. In this respect, the United States stands in the van. The Statue of Liberty, which greets the eye of the visitor to the port of New York, is really the genius of peaceful expansion.

In the old days, before the American Civil War, it used to be said that "every sea was vexed by American ships." "Yankee notions" were carried to South America, to Africa, to the South Seas, and to both the Indies by thrifty shippers, who often owned part of the ventures and the vessels which transported them. It was a comparatively petty trade, but it served to make us known; and where we were known, we were liked.

The Civil War was a lamentable interruption and the resumption of the happy *entente cordiale* has been tardy, largely for the reason that we have been hampered by the old "spoils system" of politics, and, in consequence, have not been properly represented in our commercial diplomacy.

The writer remembers an American Consul at Madras, India, who once went out, proud and rejoiced, with a salary which looked something immense in Squeedunk, or wherever he came from. In Madras, however, he found it so small that he was absolutely deprived of any social standing. Naturally, his usefulness to this country was less than *nil*. Thanks to a more enterprising administration and to pressure being exercised by the export trade, such conditions are now being abrogated. Consequently, we may now call on our friends and customers, the importers of all nations, to cooperate with us in this new diplomacy of commerce.

There is nothing in, on, under or over the earth that some American does not want and can make a good use of. Few, indeed, are the products of nature or human brains that our people cannot improve on. Let us have a joyous emulation in well doing. In other words, "Let us get together." The victories of peace exceed those of war and leave happiness behind. We have been too long on the "ragged edge" of mere acquaintanceship, when we should have formed a solid, enduring, heart-to-heart friendship. It is here where the diplomacy of commerce must work. Let our foreign friends, therefore, welcome the representative men who will hereafter be sent by the Government to occupy consular positions.

The question of credits has been a serious obstacle hitherto, but intimate acquaintance will overcome it. Individuals may have been loth to risk ventures with distant strangers, but closer relations dispel misgivings. There is more money and there is infinitely more happiness in enlightened commerce than in all the gold or diamond mines ever explored. It is our duty, as it is our pleasure, to preach this gospel of international kindness—this diplomacy of commerce.

THE VALUE OF GOOD ROADS.

GOOD wagon roads are among the best means of trade expansion, domestic and foreign, that can be devised. Lack of proper channels of traffic between the coast and interior cities and between cities, villages, mines and farms is to-day the greatest hindrance to commercial development in foreign countries.

The United States, which for years neglected this important part of her internal system of transportation, is now hard at work improving its roads. "The good roads movement," by which agitation this work has been resumed and energetically pushed, has produced magnificent results. The prime object of this movement is to establish public highways throughout the United States, thus affording easier means of communication between producer and consumer, facilitating the delivery of the mails and affording good routes for the prompt handling of troops in cases of military emergency.

The work is usually done by the county governments, but in some instances the State governments are extending their aid, even paying three-fourths of the cost. So far, more than 2,000 miles of new macadam road have been built in the Eastern States alone, and several thousand more miles are under projection. It takes about 2,000 tons of crushed stone to build a mile of road, the cost being about $1,000 per mile. In some States convict labor is being used to crush the stone, thus materially reducing the cost and at the same time utilizing labor that often is a direct loss to the government. The railroads are co-operating with the road builders by making low rates for hauling the material, expecting to reap their reward later by increased business due to the ease with which farmers and other producers can haul their goods to the railroad stations. The roads are being built away from the railroads, and thus the teams engaged in road building have a good road to haul over and at the same time help crush down the rock and level up the road. As rapidly as these roads are completed, their effect is noticeable. They bring the people of different communities closer together, and thus build up new trade relations. They have had the effect of creating a demand for more and better vehicles and have done much toward building up and expanding the trade in motor-driven vehicles.

The bad effect of poor roads is noticeable at all times. In lowlands and prairie countries, the mud often renders passage impossible. As a result, business is paralyzed, merchants cannot sell their goods and jobbers and manufacturers suffer accordingly; in this demoralized condition workmen are thrown out of employment and the demand for many articles, necessities and luxuries, is curtailed. In fact, bad roads upset the entire commercial world. Of course, the railroads also suffer because the supplies are curtailed and freight volume is cut down. When the railroad earnings fall off, their stocks depreciate in value and the country nears the verge of panic. When these roads again become passable, the wagon wheels of the farmer again turn and with them the wheels of commerce.

This state of affairs has often happened in the United States, and it is to overcome this that the good roads movement was begun. So successful has the work been that city, county, State and national governments, backed by boards of trade and other commercial bodies, are bending their energies to put the roads of the United States in thorough repair. Much has been done; much remains to be done. The movement has received such an impetus that ere long all the roads of the United States will be equal to the demands, trade will increase and commercial and social relations will improve throughout the country.

What the United States is doing other countries can do. The military necessities of Rome made the Romans the greatest of road builders. The military necessities of some nations to-day imperatively demand better roads so that the government can keep in touch with the farthermost hamlet. With this come less chance for political disturbance and more opportunity for business expansion. The work of road building cemented the kingdoms of England, Scotland and Wales, and was a powerful factor in the campaigns of Napoleon.

In some countries the roads are mere trails, on which wheeled vehicles cannot be employed, all goods being packed on mules or horses. This, of course, increases the freight cost and retards trade. Were the roads passable for wheeled vehicles, great loads of merchandise could be hauled and transportation charges reduced to normal proportions. The development of mining properties, agriculture and manufactures, in many countries, is retarded by this lack of roads. Following these roads, the railway and the electric tramway will bind closer together the cities and towns; and with other good roads radiating from the railroads to minor towns and settlements, the products of the country will be utilized and the wheels of commerce will grind out the profits that make a nation prosperous.

INADEQUACY OF INLAND TRANSPORTATION

LACK of facilities for proper inland transportation is the great hindrance to progress in many foreign countries. Especially is this the case in Central and South America, the West Indies, Asia and the Pacific islands. Trade with many of these countries is restricted to the seacoast towns, or at best to the banks of the navigable rivers. Railroads are unknown in many parts of these countries, the highways are often impassable, especially during the rainy season, and rapids and cataracts render some of the rivers almost unnavigable.

In many districts the governments have paid absolutely no attention to the arteries of commerce. Where this deplorable condition exists, it behooves the commercial trade bodies of the more favored nations to set in motion a campaign looking to the betterment of transportation within the borders of those countries which are at present almost inaccessible to international trade.

With the perfection of electrical propulsion and power, the cost of building railroads in mountainous countries can be considerably reduced. The weight of the rails required is not nearly so great, making a great saving in cost, and the centralization of the power plant makes fuel easily obtained and handled. In fact, construction cost has been decreased to such an extent that electric railroads can be built for a mere fraction of the cost of a steam road, and the operating expenses are so much less that companies of limited capital can now engage in railroad building.

This being so, the incentive is needed to open up these fertile lands and thus increase the trade of the world. Manufacturers, exporters, importers, merchants, planters and miners the world over are interested in such a movement. The question is: Who will start the agitation for better transportation?

A mining firm in a Central American state secured a consignment of expensive machinery from the United States to develop its mines. The machinery was delivered at the nearest port and placed aboard a small boat to go up the river. In this river were several falls, and it was necessary to unload the boat below each fall and haul it around to the upper level of the river. In making these several transfers a number of small parts of the machinery were lost by being dropped overboard. As a consequence, it was necessary to send to the United States for duplicate parts, and the opening of that mining property was delayed an entire year.

Had there been some proper means of inland transportation this great loss of time and money would not have occurred. This incident is cited simply to show the great risks taken by capitalists in developing territory without proper transportation between the coast and the interior.

Similar incidents will be recalled by many readers in all parts of the world. While transportation facilities are being improved in other directions, it behooves individual nations to turn their attention to the highways within their own borders.

BENEFIT OF AMERICAN CONTROL OF PANANA.

THAT American control of the Isthmus of Panama would benefit the whole commercial world was a foregone conclusion. That its benefits would be reaped so soon is a surprise to the export trade. The monopoly enjoyed for years by the Panama Railroad-Pacific Mail Steamship combination, which resulted in the restraint of transcontinental trade between the coasts of the two Americas, has been broken. The United States Panama Commission has decided to establish a flat rate on the Panama Railroad; this means one rate to every one and no longer a preferential rate to any one. The commission has also decided to reduce the rates to a reasonable amount consistent with the service rendered. This means a great saving in freight between New York and the western coasts of both South and North America, as well as to the Orient and Oceanica. It opens the door to any legitimate line of steamships and means that the American trans-continental railroads must likewise reduce their rates, if they expect to compete with the water and rail route via Panama to the western countries of South America and to other lands in the Pacific.

The extortionately high rates prevailing over the Panama road were called to the attention of Secretary Taft by the diplomatic representatives of Costa Rica, Nicaragua, Peru, Chile, Bolivia, Guatemala and Ecuador, in a memorandum of commercial grievances which stated that the freight charges over the Panama Railroad constituted an obstacle to commercial intercourse between the United States and their countries. The exorbitant rates and through transportation charges were so great that it was impossible to do a profitable international business. They called attention to the fact that it was often necessary to ship goods to and from the west coast of the Americas by way of the strait of Magellan and Liverpool, Hamburg and Havre. This not only gave the European consumer of west coast products an advantage over the United States, but also afforded English, German and French exporters a decided advantage over Americans by reason of lower transportation charges.

This latter assertion brought the matter close home, and an investigation was started at once. The South Americans declared they preferred to use American goods, but were debarred from the markets of the United States because lower freight rates enabled them to get their goods much cheaper from Europe.

The action of the Panama Commission shows that the complaints were justified. The prompt action of the board in deciding to abrogate the contract with the Pacific Mail Company and the announcement of the forthcoming new schedule of lower rates, show that the American Government has no sympathy with the tactics of the trans-continental railroad managers, but intends to give every one the "square deal" proclaimed by President Roosevelt.

To show the absolute injustice of the Panama Railroad charges, it is only necessary to quote the rate on one commodity. On coffee bound for New York from Pacific ports in Central America, the rate is $12 a ton; of this the railroad company gets $6, and on certain grades $8. On coffees bound for Liverpool the through rate is $15 a ton, and of this the railroad company gets $8. Eliminating the expenditures on the New York office of the railroad company and all fixed charges, the actual cost of transportation across the Isthmus, from the observation of Chief Engineer Wallace, is not over $1.50 a ton.

The passenger rates across the isthmus have been $4 gold for first class, and $6 currency for second class. By the new tariff, a first-class passage will cost $2.40 gold, while the second-class rate will be $2.85 silver. These rates do not cover the charge for baggage, that remaining as heretofore at 3 cents gold per pound. The old rate for telegrams was $1 gold for ten words, and 10 cents for each extra word. The new rate is 25 cents gold for ten words, and 2 cents for each extra word.

In order to make the road serve the threefold purpose to which it is dedicated by the Government, it was agreed that it would be necessary to improve it materially. It will have to be double-tracked and equipped with new rolling stock. In the improvement the cost will not all be chargeable to the road, as fifteen miles of the roadbed must be laid anew anyway, because it is on the site of the canal.

This work will put the road in condition to handle the great volume of business that will result from the reduction of rates and the improvement in service. A flood of new business is expected at once. The American exporter will now be able to undersell European shippers, and the planters of the west coast will be able to put their goods into New York at a satisfactory profit.

This flat rate also will break up the combination now existing between the Pacific Mail and the German, Chilian and English lines, by which trade has been diverted from the United States to European markets, and will call into existence a number of new steamship lines to operate between New York, Panama and the west coast. Undoubtedly these ships will fly the American flag and thus add substantially to the fleet of the American merchant marine.

At a meeting of the new Board of Directors of the Panama Railroad, selected by the United States Government, which now owns the entire issue of stock, it was decided to spend $1,250,000 in improving the Panama Railroad and also to purchase five new ships to be placed on the line between New York and Panama. This will make a sailing every five days.

The subject of a further reduction of rates is under consideration. They have already been reduced from 30 to 50 per cent., but the demand of the export interests for further concessions is being given consideration. Secretary Taft says a further reduction will be made, and, as he represents President Roosevelt, who dominates the Panama situation, this reduction may be expected by July 1st, when the contract with the Pacific Mail Steamship Company will be ended.

AMERICAN DOMINANCE IN THE WEST INDIES.

THAT it is the determined purpose of the United States to be the dominating power, commercially and politically, in the West Indies is aptly and forcibly set forth by Hon. Francis B. Loomis, Assistant Secretary of State, in a recent address before the American Academy of Political and Social Science at Philadelphia. He vigorously maintains the attitude of President Roosevelt toward the Latin-American countries, and especially the islands in the Caribbean Sea.

Mr. Loomis says, with considerable emphasis: "No picture of our future is complete which does not contemplate the United States as the dominant power in the Caribbean Sea. This Government always will be more or less concerned with the problem of the Caribbean and certain parts of the littoral; and whatever we accomplish there, through the application of the just principles of progress, will not be lost. Among the greatest of the things achieved must be counted the effect and the influence of the example which we have set in the maintenance of sound finance and order."

To show that the efforts of the United States to advance the interests of the nations of the West Indies is meeting with their approval, Mr. Loomis read an extract from a Havana newspaper which not only declares that the United States has no other purpose than to help these struggling nations right their finances and upbuild their industrial and agricultural pursuits, but commends President Morales, of San Domingo, for entering into the recent customs arrangement with President Roosevelt.

"From now on," says this paper, "the energy and enterprise of the Americans in San Domingo will lay a firm foundation for its prosperity, enabling it to pay its debts and live in peace with the world while developing the prodigious wealth of its unexploited resources. So San Domingo may now boast that it is on the road to a civilized existence."

Mr. Loomis also called attention to the beneficent results of American intervention in Cuba, saying: "The good and successful work we did in Cuba has not been lost, and we are now being invited to extend our good offices into new fields and to undertake fresh tasks in the interest of humanity. The position of the United States in the New World is ever in the process of determination. The question presents itself to us from time to time in direct and practical ways that cannot be avoided. So it will be found, I fancy, that the degree of our influence, the importance and power, if you please, of our position, will be determined by the manner in which we deal with these questions as they come before us in an intense practical way.

"If our relations with the other nations of this hemisphere are conducted in a spirit of justice and generosity, with a kindly regard for the interests of humanity, and if it be felt and understood that we are not wanton aggressors, that we have no irresistible craving for territorial aggrandizement, that we ask only for the just treatment of our citizens and for our share of the trade of the world, we cannot fail to become a solid factor or element in the international problem on this hemisphere, which shall continually make for universal prosperity and long years of productive and happy peace.

"We will ultimately have to reckon in our foreign policy with that new and great factor, the inter-oceanic canal, and the fact that the circumstances of our growth have forced us to depart from our isolated commercial situation. We are being driven by necessity to find new outlets for our products; and to our new economical problems must be given a new, if not a commanding, place in considering the relations of the United States to the rest of this hemisphere and the rest of the world."

The whole trend of Mr. Loomis's remarks goes to prove that the United States has no desire to extend its territorial borders at the expense of its weaker neighbors. It does desire that law, order and commercial probity shall prevail throughout the western hemisphere, and stands ready to help those nations that are struggling to meet their debts and keep up a stable government, and to protect them from outside interference.

It is commercial supremacy, however, that the United States craves, and by the policy now being pursued by the Government that wish will be gratified. The political friendship of a government carries with it the trade preference, and the action of the American Government in extending a helping hand in the time of need to these struggling republics means increased volume of export trade at no distant future date.

Ex-Mayor Seth Low, of New York City, also addressed the Academy, declaring that the enforcement of the Monroe doctrine by the United States tends to the peace of the world. He asserted that both the western continents have been preserved from European complications through this doctrine.

"International questions in these days," said Mr. Low, "are largely industrial and commercial in character. The United States stands for the open door throughout the world, and especially in the Far East, where a great struggle, which is being waged primarily for the markets of Manchuria, is now on. The open-door idea will be advocated as persistently and emphatically as may be necessary by the United States to secure its adoption by the nations concerned."

The following extract from the address of Prof. E. R. Johnson, of the University of Pennsylvania, shows the remarkable strides made by the United States in the last few years:

"A few years ago we were a debtor nation, largely dependent upon the aid of outsiders for the development of our own country. Our foreign trade consisted chiefly of the exportation of food and raw materials in exchange for manufactures. This situation is changing. We have surplus capital, and, although we are continuing to export great quantities of raw cotton, provisions and forest products, we are buying fewer manufactures and more materials, and are exporting increasing values of our own manufactures. There are but few sections north of the American Isthmus, and they are of but limited area, where the economic interests of the people of the United States are not paramount to those of any European country.

"In South America, Europe is stronger than the United States commercially, but that is certain to be changed throughout the western third of the continent by the Panama Canal, which will exert indirect influences that will also hasten our economic progress even along the north shore of South America."

MEXICO JOINS GOLD-STANDARD NATIONS.

TO-DAY, May 1st, Mexico joins the gold-standard nations of the world. President Diaz closed the mints of his country to the free coinage of silver on April 16th, thus adding a crown to his many acts of statesmanship. The value of the Mexican silver dollar has been fixed at 50 cents in gold, and a reserve exchange fund amounting to $10,000,000 has been set aside for the purpose of exchange. It will be expended as the occasion may demand.

This step brings the Mexican Government and Mexican business interests in closer touch with the United States and into fellowship with the great industrial and financial nations of the world.

For years American gold has been poured into Mexico. American capital has built its railroads and electric light plants, erected its large industrial establishments, developed its mines and financed its public institutions. The great drawback to progress has been the instability of the Mexican dollar, which went as low as 39 cents at one time.

Now this element of uncertainty has been swept away and a dollar is a dollar—a peso is 50 cents. Mexican traders, manufacturers and importers will soon be doubling their orders on account of the clarified financial atmosphere. And in adopting the gold standard, it may be remarked, Mexico has killed the "silver question" which so disturbed the United States several years back.

REAL AMERICAN COMMERCIAL AGENTS.

AT last the United States is awakening to the great value of the consular service, and steps have been taken to put it on a commercial rather than a political basis. It is, indeed, time. While there have always been many able men in this service, many have been placed on the rolls solely to pay political debts. The sooner that class is supplanted by wide-awake young business men, properly educated, the sooner will foreign merchants and consumers be properly informed of the quality and value of American goods.

The plan suggested by Assistant Secretary of State Loomis, to select and appoint six special consular agents as commercial attachés, has been approved by President Roosevelt and commended to the Senate.

The purpose of these attachés is to promote American trade in foreign lands. They are to be qualified business men of experienced commercial training, not mere place-seekers. One is to cover Northern Europe, Russia, Germany, Austria, Switzerland and the Balkan States; ones goes to France, Italy, Portugal, Spain and the Mediterranean countries; another has Mexico, Central and South America and the West Indies as his field; a fourth covers Great Britain and her colonies; the fifth will devote his time to the Asiatic countries, and the sixth will be held in reserve for special consular missions in any part of the world.

These men will be used to supplement the work of the regular consuls and consular agents, and will gather information of value to exporters and disseminate knowledge of American products among the merchants and traders of the world.

This step toward meeting the demands of the organized business interests will soon be followed, it is hoped, by a more sweeping reform of the entire service. The energetic manner in which Mr. Loomis is acting presages yet further changes, and it is safe to predict that a majority, if not all, of the consular posts will eventually be filled with officials who are, above all, business men, and who will devote their time to the expansion of American trade.

WRITE YOUR SIGNATURE PLAINLY.

AMERICAN exporters have a widespread cause of complaint against many foreign buyers and sales agents, who often sign their names so carelessly that they cannot be deciphered. While particular to have their letters neatly typewritten, they affix their signatures in such a manner that the recipient cannot possibly make them out. As a result, the letters go unanswered. This is a not infrequent experience in the office of THE AMERICAN EXPORTER.

A well-known exporter, in discussing this matter, said: "Among a lot of letters I received from abroad in reply to an advertisement, was one from an importer who wanted to handle my goods. It was well written and presented arguments that inclined me toward the writer, but to save my life, I couldn't make out the signature. Every word in the body of the letter was clear, but the signature was illegible. I don't know how many people there are who write plainly enough until they come to write their own names, and then write them blindly; I suppose it is more from force of habit than anything else, for they may be otherwise the most careful people in the world.

"Every man should write his signature with perfect distinctness, so that it can be read easily and without mistake by those unfamiliar with it, and also as a mark of his own care and exactness.

"One letter that I received, its body written, had its signature put on with a hand stamp. I didn't know just what to think of this, but it had at least the merit of perfect plainness."

A RAILROAD SYSTEM FOR THE PHILIPPINES.

AN extensive railroad system for the Philippines is being projected by an American syndicate, involving the expenditure of many millions of dollars. Mr. F. A. Delano, formerly general manager of the Chicago, Burlington and Quincy Railroad, has been engaged to draw up the plans for the construction of the 700 to 800 miles of railway, which is to be the nucleus of the proposed system. It is understood that the railroad will cover all the larger islands, being run in connection with ships and steam ferries to bridge the water gaps.

Secretary of War Taft is the originator of this vast enterprise. The imperative need of transportation in the Philippines impressed him deeply while Governor of the islands, and upon his return to the United States he took up the matter with the Hon. Paul Morton, Secretary of the Navy, who was formerly the executive of the Santa Fé Railroad. Mr. Morton comprehended the situation at a glance, and, on the ground of both patriotism and business, urged the matter upon a number of Chicago capitalists with whom he had had intimate business and personal relations.

As a result, it is announced that Mr. E. A. Potter, president of the American Trust and Savings Bank; John Jay Abbott, cashier of the same institution; Norman B. Ream, and Elbert H. Gary, chairman of the United States Steel Company, all of Chicago, have decided to support Mr. Morton in the execution of his scheme.

It is understood that so soon as Mr. Delano's plans are drawn up other multi-millionaires will be invited to join in the project. The matter may be presented to Congress at its next session, and a subsidy in land and cash may be asked to aid in the construction of a net-work of railroads that will do more to quickly pacify the islands and advance the moral, physical and financial welfare of the dependency than any other means.

The merchants and planters of the Philippines will welcome this move as heartily as will the exporters of the United States and of the world. With the railroads in the hands of American capitalists, the export trade of the United States to the Philippines would probably receive such an impetus as to practically exclude competition, and the present volume of business would grow to enormous proportions. The report of Mr. Delano will be awaited with interest by Philippine and American merchants alike.

A MOVE IN THE RIGHT DIRECTION.

MR. O. P. AUSTIN, Chief of the Bureau of Statistics, Department of Commerce and Labor, left this country on Saturday, April 22d, for a trip to Europe and Asia. The object of Mr. Austin's visit is to measure—as only a man like Mr. Austin can measure—the vast possibilities, the wonderful opportunities, opening up to our people in European and Asiatic markets. Mr. Austin's mission will take him along the great lines of travel and transportation, to the world's greatest trade centers, to the golden gateways of the world's trade—Liverpool, London, Havre, Hamburg, Genoa, Naples, Cairo, Alexandria, Constantinople and the great trade centers of the East.

Whatever aids long years of work in Washington have afforded will accompany Mr. Austin. He has had a great many years of experience in the newspaper and official world. These must mean much to him in his present efforts to get in touch with the world's industrial and commercial work. Whatever Europe and Asia have to offer, both as buyers and sellers, Mr. Austin will doubtless be able to bring back. No man has had a better chance to prepare for such a trip than has been afforded the Chief of the Bureau of Statistics. At no time in our history have we had greater need of expert evidence as to what is to be in the European and Asiatic commercial and industrial world. It is to be hoped that Mr. Austin will bring back a vast fund of facts and a new inspiration.

Among the special subjects to which he hopes to give a good deal of attention, tariffs and trade treaty making rank high. In his preparatory work along these lines, he has had the invaluable aid of the tariff expert of the Bureau of Statistics, Mr. N. L. Stone. The money of the people can be put to no better use than in sending experts to Europe for the purposes of study. Such men come back better informed and better qualified to do desirable work. Congress would do well, or will do well, the day it sets aside a large sum for no other purpose than to send commercial and industrial experts abroad for the express purpose of studying foreign fields, factors, etc.

IN THE FAR EAST.

THE entire commercial world awaits the outcome of the great sea battle that is soon to be fought in the Far East. Upon its outcome hangs the future of the international trade of the Orient. At this writing, Russia's warships are off the coast of Indo-China; Admiral Togo nearby awaits its oncoming with the powerful Japanese fleet. The clash is near. Should Japan be defeated, she loses control of the Pacific. If Russia is beaten, her power in the East is broken and she may never be able to recoup her losses. Japan is fighting the battles of the whole world for the open door in Asia. Russia is battling to secure an open port on the Pacific and to retain her control over Manchuria, her rich markets and fertile fields.

Since Russia occupied Manchuria, American trade with that province has dwindled to practically nothing. The large cotton mills that sprang into existence to supply the demands of Manchuria have been dismantled. Their trade is gone. Russia grabbed all.

With Japan in control, pledged to the open door, international trade with Manchuria will revive. All the United States asks is a fair field and no favor. She can compete with the world. Her goods have proved their superiority.

So it is with intense interest that the outcome of this great sea fight is awaited. While Russia has the largest number of ships, Japan is superior in gun effectiveness. Naval experts figure that Admiral Togo should win. If he does, Russia will be compelled to sue for peace. With peace will come a great revival of trade. China needs railways; Japan must extend her railroads and rebuild her ships; Manchuria needs agricultural implements; Russia must rebuild her navy. All these needs must be filled quickly. The demands they create will accentuate the speed of the wheels of commerce and bring prosperity and profit to many lands.

American Stoves in China.

FROM a recent report of Mr. George E. Anderson, United States Consul at Hangchau, China, published in *Consular Reports,* it is evident that there is a greater demand for stoves of American make in some portions of China than is generally known. Most of the heaters in use among foreigners are American stoves brought to Chinese ports from the United States, a single New York firm seemingly having most of the business.

The stoves used in the central latitudes of China have little in common with those generally in use by the people of the United States. They are small, consume little fuel, comparatively speaking, and give off little heat. The Chinese, as a rule, do not know what winter comfort with a stove really is. For ages they have huddled over small brass foot or hand stoves or brass braziers filled with glowing charcoal, and what they have lacked in artificial heat they have made up as best they could by extraordinary amounts of clothing. No public building in that part of China has a fire in it in winter. The schoolrooms are without artificial heat, the churches and temples never knew a stove, and most of the Chinese people are so dressed that they would be uncomfortable if there was any artificial heat. As a result the missionaries have introduced heaters in few, if any, of their schools, and in the course of time they are likely to so modify their way of living that they will use few stoves and little fuel themselves.

At the same time the use of stoves and artificial heat among the well-to-do Chinese is increasing, and it is only a matter of a comparatively short time until there will be an immense demand for American heating apparatus if the present lead of the United States in this line of goods is maintained. How little attention is paid this field by some American manufacturers, however, is apparent from the fact that three families sent to the United States for direct shipment of three stoves known as "air-tight heaters"—modern wood-consuming stoves, which are very popular—when they should have been able to purchase the same from "stock on hand" in some sample warehouse in the Empire. With the increased supply of fuel and a lowering in its price, which is soon to follow the opening of more of China's coal fields, there ought to be a corresponding widening of the field for American stoves.

American cooking stoves and ranges are popular, although there are not many real "ranges" in China. Chinese cooks, when cooking for the Chinese, cling to the old Chinese range of brick and mortar with fixed cooking pans of iron or brass. Foreign-trained cooks appreciate foreign makes of stoves and will take them if they can get them. The prices charged for American stoves in China run very high, much higher than the cost at home would seem to justify. In all goods of this class sold in China the profit of the retailer is far beyond what would be thought of in the United States.

The lowering of the cost of American stoves in China, by the reduction of freight rates from the Central States to the coast and thence across the Pacific, would undoubtedly immediately result in largely increased sales.

Missionaries Create Trade.

THE following is an abstract from a letter written to Mr. John D. Rockefeller, the head of the Standard Oil Company, by Mr. Gates, when the American Board of Missions requested a donation of $100,000, which was granted:

"Missionaries and missionary schools are introducing the application of modern science, steam and electric power, modern agricultural machinery and modern manufacture into foreign lands. The result will be eventually to multiply the productive power of foreign countries many times.

"This will enormously enrich them as buyers of American products and enormously enrich us as importers of their products. We are only in the very dawn of commerce, and we owe that dawn, with all its promise, more than to anything else, to the pioneer work and the channels opened up by Christian missionaries. Missionaries are largely influential to-day in the diplomacy of the Orient. The debt of America, therefore, to missions is simply incalculable. Yet the fruitage is only in its beginning.

"For illustration: Our commerce to-day with the Hawaiian Islands, which are now Christianized and no longer take missionary money, is, I am told, $17,000,000 per year. Five per cent. of that in one year would represent all the money that was ever spent in Christianizing and civilizing the natives. When the missionaries went there the Hawaiians were cannibals, without a dollar of exports or imports. To-day these islands are an immense source of wealth and of comfort to the American people.

"What is true of Hawaii is even more strikingly true of Japan and its commerce. Missionary enterprise, therefore, viewed solely from a commercial standpoint, is immensely profitable. From the point of view of subsistence for Americans, our import trade, traceable mainly to the channels of intercourse opened up by missionaries, is enormous. Imports from heathen lands furnish us cheaply with many of the luxuries of life and not a few of the comforts, and with many things, indeed, which we now regard as necessities.

"But our imports are balanced by our exports to these same countries of American manufactures. Our export trade is growing by leaps and bounds. Such growth would have been utterly impossible but for the commercial conquest of foreign lands under the lead of missionary endeavor. What a boon to home industry and manufacture! An officer of the United States Steel Corporation tells me that that company alone is exporting American products to between forty and fifty different countries."

A Floating Navy Yard.

A FLOATING navy yard, in miniature, was recently launched in New York City by the United States Navy Department. It is at the same time one of the most unique and most important enterprises ever attempted. It is officially called a floating repair ship, and is intended to obviate the necessity of docking warships. All ordinary repairs may be made while a ship is simply at anchor.

It is the most perfect naval repair shop in existence, and no effort or expense has been spared to make it perfect. Every inch of space above and below deck is utilized. The ship is 120 feet in length, 40 feet wide and draws only 6 feet of water, thus allowing it to be towed into a shallow bay or stream to do work on light-draught gunboats and other small craft.

The boat has a generous beam and, constructed entirely of steel, will stand almost any strain imposed on it. It is non-sinkable and can be towed in any sea a cruiser can navigate. It has no self-propelling power, as all available space is taken up by machinery and tools.

Naval Constructor William J. Baxter designed and constructed this remarkable floating workshop. It was the product of years of thought and study, and was brought about by the great expenditure in time and money involved in docking a modern warship in order to make slight repairs. Often small repairs are neglected on account of this loss of time and lack of docking facilities until ships are in extremely bad condition. With the new repair ship this will not be the case.

A giant steam derrick that will lift twenty tons is on one end of the ship, the boilers offsetting its weight at the other end. The derrick will be used to lift heavy ordnance and gun-carriages to the shops below deck. The boilers furnish steam power to operate the machinery and lighting plant. There are two repair shops—one on deck and one below, located amidships. In them will be found every machine and tool used at a navy yard. Workmen may work night and day, for the ship's lighting system is perfect. The guns, carriages and parts of ships to be repaired can be lowered to either shop by the derrick, so that in stormy weather work may proceed below deck.

The superstructure or deck work of cruisers and gunboats will be repaired by running the repair ship alongside; the pneumatic and electrical tools will then be taken aboard and the work will proceed by means of the power furnished from the repair ship's shops. A ship, after collision, can have its entire bow replaced without docking, and any repairs can be made down to the water line. The electrical tools are portable, and by means of coiled wire can be carried to any portion of a ship. Workmen can rivet on plates on both sides of a vessel and other repairs can go ahead in the shops at the same time.

The floating navy yard will be given a thorough test; if it proves entirely successful, an entire fleet will be built for the American navy. One of these shops will be stationed in each important port on both coasts, and one sent to the Philippines.

No doubt the maritime world will follow this example and have repair ships built in all parts of the world. The need of such shops is self-evident. Modern electrical and pneumatic tools make their operation feasible and practical. With these modern floating repair plants all the ordinary repairs on a modern ocean liner could be made without docking. The great freighters could be repaired without taking them out of commission, and thus thousands of dollars would be saved to their owners.

A Successful Rolling Roadway.

A ROLLING roadway to help teams and trucks up a steep hill is in successful operation at Cleveland, Ohio. It is operated upon the moving sidewalk principle. The roadway consists of a long moving platform substantially built of heavy timbers arranged crosswise and divided into spaces of 2 feet each to give pliability. It is 8 feet wide. The boards are fastened with metal links and bound with metal to save wear and tear.

The belt formed by these boards thus linked is extremely strong and heavy, weighing ninety-nine tons. It turns upon a drum at each end and is rotated by means of chains and sprockets. Idlers support the belt roadway as it returns on the underside. Two safety cables extend the entire length of the belt.

The rolling road is 420 feet long up a 65-foot grade. The heaviest loads are carried up this incline in three minutes. It is equipped with sufficient power to carry all the wagons that can be driven on it at one time, its daily capacity being about 600 teams and trucks. Four electric motors drive this huge machine, which is controlled from a tower at the summit of the incline. As the use of this moving roadway saves fifty minutes in time and is a great relief to the teams, it is well patronized. The charges range from 10 to 25 cents a trip; foot passengers pay two cents.

The roadway has been so successful that another and larger one is planned on another street of Cleveland. This rolling roadway could be used successfully to help teams up river bank grades and like places, in connection with transportation and cartage of goods.

Speedy Electrical Locomotive.—One of the new electric motors built for the New York Central Railroad to be used in suburban train service attained a speed of eighty-three miles an hour, pulling a heavy train. So successful have these electrical locomotives stood the repeated tests that the New York, New Haven and Hartford system will use them on branch lines.

United States Trade with Argentina.

THE newspapers of Argentina are calling upon the manufacturers of the United States to come or send representatives to make a thorough investigation of the business conditions of that country, with a view of extending the international trade and to securing adequate direct steamship connections between the two countries. The lack of proper transportation is one great drawback to the trade and the unwillingness of Americans to extend sufficient credit of long enough duration is the second obstacle in the way of greater commercial intercourse. In discussing these matters the *Review of the River Plate* says:

"If American trade is to improve, it is essential that manufacturers fall in with the credit terms general in this market. It is a well-known fact that the United States can be called 'conservative,' as the word is generally applied, only in the matter of credit, so far as business is concerned. There is no more enterprising people on the face of the earth than the Americans of the great Republic. They are ready to tempt any risk, so far as furnishing goods for trade is concerned; but as a rule they are not willing to accord the long credits demanded in some countries. To extend an unusually long credit for his goods is not according to American ideas, and the nation has lost much trade by refusing to adapt its terms to the people with whom it is seeking trade. We have frequently had occasion to revert to the question, and we shall continue to do so, in the hope that our words will gradually bear fruit. Manufacturers desirous of doing business with the country should either come out themselves or else send a representative to make a thorough investigation.

"In spite of the drawbacks that American manufacturers have had to combat against, they have had a very fair share of the agriculture implement trade of the country. Our fields are fenced with barbed wire made in the United States; American machinery is used in farming operations. Indeed it has often been said, anent the competition of the Argentine wheat fields, that if our Southern contemporaries want to raise cereals well and good, at least the United States is going to furnish them with the requisite machinery. Long since there has been active rivalry between English and American manufacturers, each claiming the superiority of his products, the latter being handicapped mainly by lack of just these steamship connections which it is desired to establish. In spite of all handicaps, however, American manufacturers of machinery are selling their implements in large numbers in the Argentine Republic. The total value of the farm machinery exported to Argentina by the United States increased from $200,000 in 1891 to $3,000,000 in 1903. The farmers of the entire country, even those who might be expected to be most ignorant, are alive to the advantages of modern appliances in their craft, and it remains true that the greatest difficulty is one of securing better facilities for getting American machinery to the country."

Capacity of New Steamships.

THE huge new steamship *Minnesota*, which sailed on its maiden trip from Seattle to China, carried a miscellaneous cargo valued at $1,200,000, as follows: 21,000 bales of piece goods, 14,000 bales of raw cotton, 23,000 cases of canned goods, 1,000 cases of cigarettes, 600 tons of flour. Other freight makes the total cargo in sight over 22,000 tons. As indicating the value of this cargo, as shown by the ship's manifest, these amounts may be noted: Domestic dry goods, $418,835; cotton, $237,045; canned goods, $175,885; cigarettes and tobacco, $115,135; leather, $92,450; flour, $81,340; machinery, $29,150. On her return trip she brought 16,000 tons of freight and 150 first-class passengers.

Her sister ship, the *Dakota*, is at New York loading for a trip around South America and up the Pacific to Seattle. The *Dakota* is a mammoth vessel. Her length over all is 630 feet; extreme beam, 72½ feet, and depth from upper navigating bridge to bottom of the keel 88 feet 4 inches, which is equal to the height of an ordinary 10-story building. When fully laden, the displacement of the *Dakota* is 33,000 tons, and with her full cargo (and she has a gross tonnage of 20,718 tons) she can make 15 knots even in heavy seas.

The *Dakota* has a double bottom practically the entire length. There is a water-tight steel deck 6 feet from the bottom, extending from stem to stern and from side to side. If the outer shell of plating were punctured the water could not pass the inner bottom. There are numerous steel bulkheads extend-from the bottom up to the main deck the entire width of the ship, and one extending from stem to stern along the center of the ship, which subdivide the hull into almost innumerable separate water-tight compartments.

She will have accommodations for first cabin passengers, while below deck provision is made for carrying 1,300 troops or 2,400 third-class passengers. Her crew will number 250.

The *Dakota* is also to be used in the Oriental trade, sailing from Seattle. Trade with Asia is increasing in rapid strides and these great vessels will soon be supplemented by others in order to handle the trade.

America Exporting Jinrikishas.—The superiority of American vehicles is again shown by the fact that jinrikishas, the national vehicle of Japan, are now being manufactured in the United States and exported in large quantities to Japan; also to China, South Africa and the Philippines, where they are being used to some extent. The American-built vehicles are very light, wood frames, steel tube wheels and rubber tires being used. The constant change in designs and the application of modern improvements to the jinrikishas have made it a most valuable vehicle, and has extended its use to other nations than Japan.

American Machinery in South Africa.

AMERICAN dash and enterprise is fast winning a large share of the South African trade, especially in the line of mining machinery. The products of British factories are being pushed out and American goods are taking their place. If America can successfully compete with other countries in one of England's greatest colonies, it surely indicates that American goods are superior in quality and lower in price, all things taken into consideration.

Perhaps the best evidence of American success in South Africa is voiced by a newspaper printed at Durban. It says:

"America is especially well represented in all markets for coal mining machinery. South Africa is far from proving an exception, and many important contracts, especially for coal-cutting and electrical plants, are placed across the Atlantic. Such a result, however, is almost entirely due to the very great enterprise shown by American firms, and if similar efforts were put forward by British manufacturers something like a monopoly of the trade would be the outcome. It is in the hope of inducing this enhanced enterprise that further reference is made to the matter.

"The development of South Africa's collieries, for the present at least, depends almost entirely upon mining and general industrial development, coupled with the country's railway extensions. The greater activity now being witnessed in all these directions is far from being lost on colliery interests, and it is certain that marked development will next year characterize the industry. It is equally certain that unless home firms now exploit such possibilities and obtain that wide degree of publicity and energetic representation which American houses are securing much new work will pass into American channels.

"Once diverted into that source the persistency of American methods is calculated to keep it there, and Great Britain becomes a permanent loser. The anticipated demand is likely to be a wide one, embracing hauling, cutting, transport and electrical machinery, as well as extensive requirements for less important equipment. The development now foreshadowed has been long expected, but its initiation has been largely dependent upon greater activity on the Rand. Such activity is now to hand, and is already reflected in the greater enterprise which the coal mining companies are displaying. The requirements of the latter, coupled with their demand for general stores, form an important section of trade which could be rendered far more remunerative to the mother country that it is at present.

"Many of the contracts are of the most remunerative nature. Durban has been considering tenders from all countries for a coaling plant, and many other important installations are reaching fruition in Natal. We need not doubt that America will make an energetic bid for these."

Improving American Skilled Labor.

AMERICAN manufacturers are vieing with each other in the matter of improving their plants and bettering the conditions surrounding their workmen. Many factories now have restaurants, where hot meals are served to employees at cost; gymnasiums, reading and recreation rooms, free baths, rest-rooms for female employees, doctors and nurses are also provided.

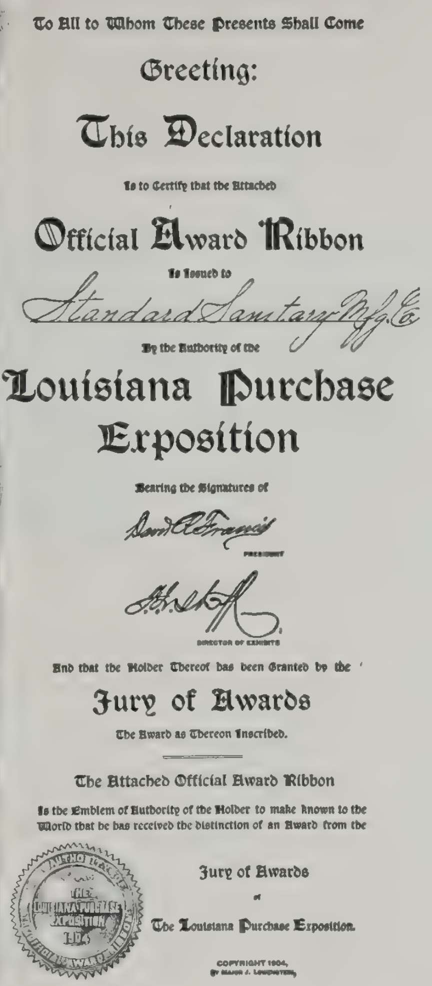
Some factories are being beautified by the planting of plants, flowers, shrubs and lawns, so as to make beautiful vistas whenever the eye strays from the shop or office. Other factories have established schools to teach their apprentices and even their journeymen. Noted lecturers and teachers address the employees and thus broaden their knowledge.

In discussing this movement, which is called welfare-work by some, a noted Western manufacturer said that every dollar he spent on employees came back fourfold. In other words, it pays to give his men the highest wages and add to it a small percentage to be expended for the common good. He explained that the skilled worker readily absorbed the educational matter brought to his attention, and in that way became more efficient. By furnishing the employees with clean, hygienic surroundings, free baths and good food, their health was improved, and with improved health and education the work performed by them improved in quality and quantity.

This resulted in larger profits for the firm, since only high-grade products were turned out. The inspectors had little to do, for the work was finished rightly. No goods are returned as imperfect and hence the profits of the concern increased.

Foreign consumers are being greatly benefited by the increased efficiency of American workmen, for machinery shipped abroad is now received in better condition, can be quickly set up and started to work. This new system is doing away with much slipshod work and is increasing the efficiency of the American mechanic and raising the standard of his output.

America as a Money Power.—The United States is the wealthiest nation on earth. To-day her citizens are possessed of $110,000,000,000. Fifty years ago $7,000,000,000 represented the total wealth within her borders. The United Kingdom is worth $55,000,000,000, just one-half that of her American offspring. France has $50,000,000,000, Germany $48,000,000,000, Russia $35,000,000,000. Austria-Hungary $30,000,000,000, Italy $18,000,000,000 and Spain $12,000,000,000. Though having but one-twentieth of the population of the world, the United States has one-fifth of the world's stock of money and one-fourth of its gold coin and bullion. In the last twenty years the United States has acquired two-thirds of the world's banking power ($14,000,000,000). One-third of all the savings bank deposits of the world are held by American banks.



To All to Whom These Presents Shall Come

Greeting:

This Declaration

Is to Certify that the Attached

Official Award Ribbon

Is Issued to

Standard Sanitary Mfg. Co.

By the Authority of the

Louisiana Purchase Exposition

Bearing the Signatures of

David R. Francis
PRESIDENT

DIRECTOR OF EXHIBITS

And that the Holder Thereof has been Granted by the

Jury of Awards

The Award as Thereon Inscribed.

The Attached Official Award Ribbon

Is the Emblem of Authority of the Holder to make known to the World that he has received the distinction of an Award from the

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The Louisiana Purchase Exposition.

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Porcelain Enameled Sanitary Ware

IS SUPREME IN DESIGN, QUALITY AND DURABILITY IN RECOGNITION OF ITS SUPERIORITY. . . . THE HONORABLE JURY OF AWARDS OF THE LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, 1904,

HAS CONFERRED UPON "Standard" WARE, WHICH WAS EXHIBITED IN COMPETITION WITH ALL OTHER SANITARY GOODS, THE HIGHEST AWARDS AND HONORS, NAMELY

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SINCE **1893** "Standard" WARE HAS BEEN HONORED WITH THE HIGHEST AWARDS AT EVERY GREAT EXPOSITION, NINE IN ALL. OF THESE AWARDS, THREE HAVE BEEN OBTAINED IN FOREIGN LANDS AND SIX IN THE UNITED STATES. EACH AWARD CONSTITUTES THE HIGHEST OFFICIAL HONOR OF THE PERIOD.

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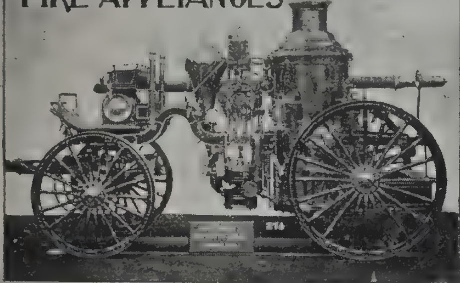
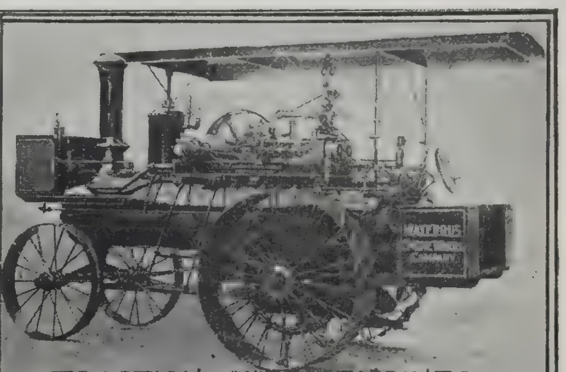
FIRE APPLIANCES

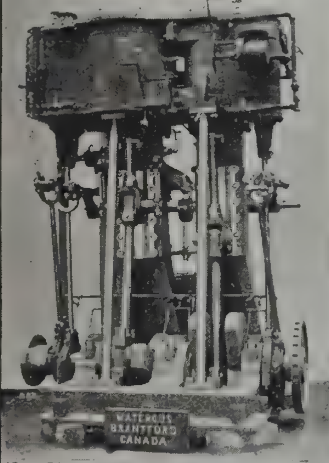


ROLLERS
ROCK CRUSHERS ROAD MACHINERY GRADERS & DUMP CARTS.



TRACTION DOUBLE CYLINDER ENGINES

MARINE ENGINES & BOILERS.



15 AND 30×20 FORE AND AFT COMPOUND MARINE ENGINE WITH STEAM REVERSE

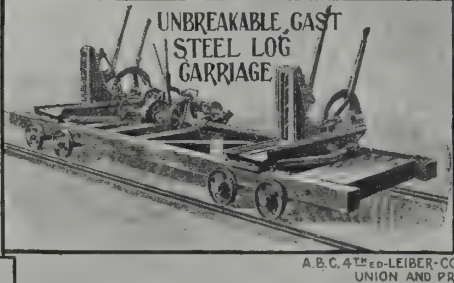
1844

NEW FACTORY
BUILT IN 1895 SINCE THEN THE FOLLOWING EXTENSIONS HAVE BEEN MADE
MACHINE SHOP LENGTHENED 140 FT NOW 440 x 120
BOILER SHOP 100 FT. NOW 220 x 80
MOULDING SHOP 100 FT NOW 180 x 80
BLACK SMITH SHOP 40 FT. NOW 100 x 40
WITH CORRESPONDING INCREASE IN EQUIPMENT.

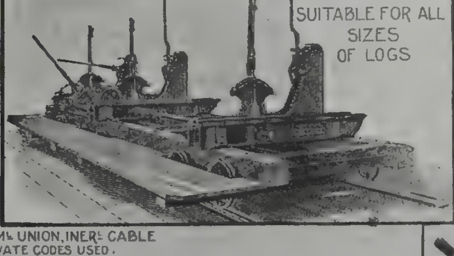
1905

BAND AND CIRCULAR SAW MILLS LARGELY EXPORTED

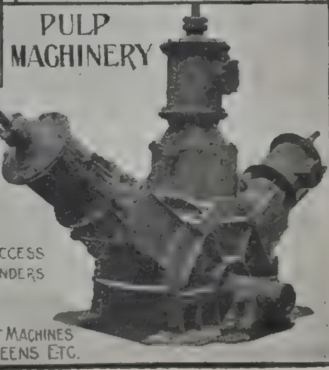
UNBREAKABLE CAST STEEL LOG CARRIAGE



UNBREAKABLE ROLLED STEEL CARRIAGES SUITABLE FOR ALL SIZES OF LOGS

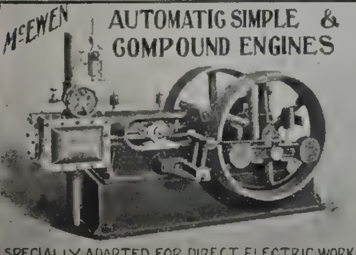


PULP MACHINERY



SUCCESS GRINDERS
WET MACHINES SCREENS ETC.

McEWEN AUTOMATIC SIMPLE & COMPOUND ENGINES



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OUR LONG EXPERIENCE IN EXPORTING MACHINERY IS A GUARANTEE THAT SHIPMENTS WILL PROPERLY FILL REQUIREMENTS AND ARRIVE IN PERFECT CONDITION
PLANS FURNISHED AND SKILLED MECHANICS PROCURED AT MODERATE WAGES TO ERECT AND RUN OUR MACHINERY
FULL LINE OF WOODWORKING MACHINERY.

WATEROUS ENGINE WORKS COMPANY, LIMITED.

Brantford, Canada.

The Marvelous Growth of the United States.

THE unparalleled growth of the United States in population, finance, commerce, industries and agriculture is strikingly set forth in the statistical abstract for the year 1904, advance proofs of which have just come from the Government press. This report forms a volume of 659 concise pages, and the volume as a whole tells the story of the nation's progress in a fascinating manner.

In one year the population of the United States increased 1,380,000, the total estimated population now being 81,752,000.

Financially, the country is prospering as never before. The circulation increased in one year $151,450,691—a gain of $2 per capita. The gain in gold circulation alone was $28,000,000. The national debt decreased $19,000,000, while the yearly payments of interest decreased more than $1,360,000. The number of persons depositing money in savings banks increased 270,215, and the total bank deposits show a gain of $446,853,405.

American exports for the year show a decided increase, the figures being more than $40,000,000, while the imports decreased about $34,000,000. These figures indicate the marvelous growth of the manufacturing industries, which are not only increasing in number, but are doubling and trebling their output. The quality of manufactured goods is such as to bring heavy increased orders from abroad. This is one of the most gratifying signs of the coming American supremacy in the manufacturing world.

While the American exports of manufactured goods are increasing at such a rate, the farmer still holds the crown. The exportation of agricultural products last year amounted to $853,643,073, while that of manufactured goods sold abroad was $452,415,921—a gain of more than 10 per cent. over the record of the previous year.

As indicative of the healthy and prosperous condition of the United States and its ability to supply the demands of foreign buyers, the following figures are also important:

Of railroads, which are to the country what the veins and arteries are to the body, 4,595 miles were built in the last year. The number of passengers carried was more than 42,000,000 larger than in the year before, the grand total being 696,908,994. The total amount of freight carried by the railroads one mile was 171,290,310,685 tons, or over 15,000,000,000 tons more than in the year before.

All this but emphasizes the fact that the United States is on the top wave of prosperity and is now able to extend its foreign trade to the utmost. American manufacturers are actively at work outlining plans for new and extensive selling campaigns. Advertising matter, printed in all the languages of the commercial world, is being prepared in great quantities, and importers abroad may expect an invasion by an army of salesmen and demonstrators that will help educate the foreign consumer to the superior merits of American-made goods. This period of prosperity has unloosened the purses of the American manufacturers, who are now looking to the foreign field to consume the rapidly increasing output of their factories and mills. They propose to leave no stone unturned to create and build up a demand for American-made goods.

Commercial and financial reports from all sources—the Government, bank clearances and commercial agencies—for the first quarter of 1905 are decidedly favorable. All show a large increase over the same period of last year and indicate for 1905 a most assuring and prosperous year for American industries.

Iron and Steel Industry Breaks Records.

PROBABLY in no other industry in the United States has prosperity shown itself so prominently as in the iron and steel trade. No doubt 1905 will be the greatest year in the history of this business. The demand for all kinds of iron and steel goods far exceeds the supply.

Practically all the blast furnaces in the United States are in full operation. Even the abandoned ones are being put in order to pour forth the metal, for which there is such a crying demand. The weekly manufacture of pig iron now exceeds 400,000 tons, breaking all previous records. The United States Steel Corporation has been compelled to buy pig iron from private firms and dealers, thus eating up the reserve supply. Although production is being carried on to its utmost limit, the supply is inadequate and several mills have already withdrawn from the market, owing to their inability to fill orders promptly. Premiums are being paid on billets, plate and structural steel.

Foreign buyers, to avoid paying the higher prices that are sure to come, should get in their orders at the earliest possible moment. This is absolutely essential if an early delivery is required, for all signs point to a repetition of the steel famine of 1902, when consumers were forced to pay exorbitant prices and suffer unreasonable delay in the delivery.

The mines are being operated to their fullest extent, and it is estimated that 33,000,000 tons of ore will be taken out of the Lake Superior region this year—about 6,000,000 more tons than in 1902, the record-breaking year.

While higher prices on wire and wire products have not yet been quoted they are daily expected. The domestic demand is overwhelming; this, coupled with foreign orders, is bound to stiffen prices. There is a fair supply yet on hand, but it is rapidly being eaten up.

Builders' hardware, too, is becoming scarcer with the constant heavy demands, both domestic and foreign. There is a large amount of building going on in the United States this spring, and the outlook in that line is the brightest in years.

This great prosperity is bringing new capital into the iron and steel industry which will, in a measure, soon relieve the tension. A new $15,000,000 steel plant is to be built this year near Pittsburg, in competition with the United States Steel Corporation. It is backed by Pittsburg capital, and the project includes blast furnaces, steel mills and pressed steel car works.

With the steel and iron business booming and the largest wheat crop on record in sight, the prosperity of the people of the United States for the immediate future is assured beyond doubt. In fact, everything points to the greatest industrial progress in the history of the world.

American Workingmen as Trade Expanders.

ANOTHER pleasant testimonial to the high standing and efficiency of the American workingman is the tribute recently paid to him by Mr. John Mosely, head of the Mosely Industrial Commission of Great Britain, composed of twenty-three English gentlemen, who visited the United States last year to take note of the industrial progress of this country.

After a visit to the principal cities of the United States, involving trips of several thousands of miles, Mr. Mosely and his party returned to England. In a recent address at Leeds, in which he gave an account of the work of the Commission, he made the following statements:

"America is forging ahead as a manufacturing country by leaps and bounds. Few, who have not seen for themselves, realize this fact. Americans have leaped, in a generation, from an agricultural community into the first place as manufacturers. America possesses, within herself, all the soils, climes and products that go to make a great nation. She has always realized what a boon education is, and many of her successes must be attributed to that.

"We in England manufactured for the world, and in our blind ignorance imagined that because we were the sole manufacturers the rest of the world was unable to manufacture. Now we are having a rude awakening. America, by means of an enlightened people, has brought science to bear upon industrial problems and has forced herself into the front rank. America realizes that merit meets with its reward, and metes out to the men the same treatment we do to our dumb animals. If one wants to get the best out of a horse, he has to stable it well. The same rule applies to human beings. If one wants to get the best out of a workman he must treat the latter with consideration, pay him well and give him due reward for his labor.

"In America suggestions are welcomed, and when a workman has anything to say he is not snubbed. It is an inspiration to cross the Atlantic and see what progress is doing for the betterment of humanity. If we are to do good and prosper in the future, with our enormous possibilities, we must take a leaf out of America's book."

For all of which complimentary remarks, the American workingman will no doubt take off his hat and return due thanks.

Growth of Automobile Trade.

TO show the growth of the automobile business, it is but necessary to mention the fact that there are now in New York alone 15,000 in daily use. One express company operates thirty-two motor trucks, and all the large stores use autos in their delivery service. American auto builders have been far behind in their deliveries, but are now catching up and turning their attention to new lines.

An auto fire-engine is one of the latest novelties advocated by builders of automobiles. The remarkable progress made in motor-driven vehicles during the past few years has brought the manufacturers up to the fire department and a strong effort is being made to secure the adoption by the American municipalities of engines thus propelled.

A new engine is of the internal combustion kind, driving a direct-connected dynamo at constant speed, and motors are supplied from this dynamo which drive the traction wheels and pumps. With this outfit a speed and facility of control is obtained far superior to the horse-dragged steam fire-engine. No doubt our foreign readers will soon be introduced to this new machine.

There are several motor engines in England propelled by petroleum engines, the pumps being worked by direct steam pressure, but nothing along the line proposed by the American manufacturers.

There is an engine at Hull, England, of 50 horse-power and capable of throwing 500 gallons of water a minute to a height of 150 feet. It is propelled by a steam water-tube boiler situated between the rear wheels. It is heated by a petroleum burner, in which the fuel is sprayed into the furnace.

In front of the boiler is the engine, with a pair of inverted cylinders driving two direct and double-acting pumps. The pumps can be disconnected from the engines, and by throwing into gear a pinion-wheel the motor drives a countershaft, from which the power is transmitted to the wheels. Thus the same motor takes the vehicle to the fire and on arrival pumps the water.

American motor builders also have their eyes on the Scotch fishing fleet and are trying to induce the Scotchmen to replace their sails with gasoline motors. There are 10,000 sailboats in the Scotch fisheries, and should the Americans succeed in interesting them a big trade may be opened up.

An automobile freight line has been established between Lima and Callao, Peru. At present five automobiles are in use, each with a capacity of five metric tons. They carry a cargo direct from Callao docks to the consignee's warehouses or business places in Lima.

An auto lawn-mover has also been designed and is in successful operation.

—The Colombian Government has increased its duty on imports 70 per cent., effective at once.

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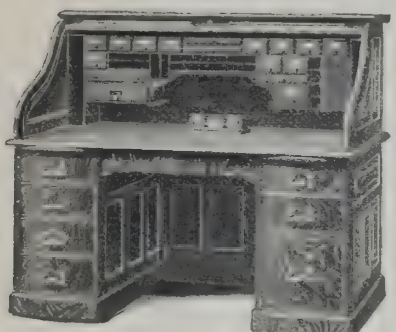
Muskegon, Mich., U. S. A.

Cable Address: "MOON," Muskegon.



No. 60.

Manufacturers of

Roll-Top Desks
Flat-Top Desks
Bookkeepers' Desks
Typewriter Desks
Filing Cabinets
Typewriter Stands
Directors' Tables

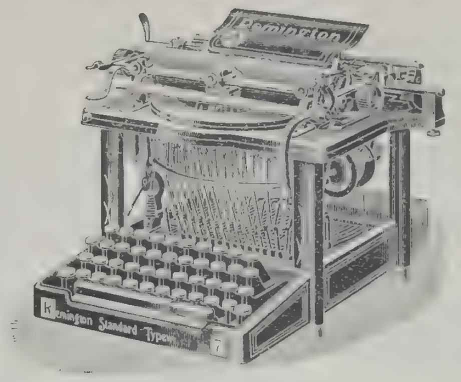
No. 60.—60 inches long; 36 inches wide; 52 inches high. Weight, 400 pounds.

A swell front desk of exceptional value to every desk user. Note the special features in pigeon-hole case: Card index drawer with follow block attachment, private compartment with flat-keyed sub-treasury spring lock, one letter file complete with index, 11 wooden pigeon-hole boxes 9 inches deep with quartered-oak fronts; special arrangement for stationery, memoranda books, order books, etc. File boxes and card index drawer are trimmed with cast-brass label holders and highly polished cast-brass knob pulls, letter file drawer with cast-brass label holder pull, small drawers with polished cast-brass knobs; pen brackets and bracket drawers; spacious book stalls at either end of pigeon-hole case. Pedestal drawers trimmed with massive cast-brass ball and socket pulls. Large center draw with flat-keyed lock.

No charge for inkwell.

Let us have *your orders.* We believe you will be pleased and satisfied with the "New Moon."

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.



30 Years
Of unquestioned ascendency.

30 Years
Of steady improvement in quality.

30 Years
Of constant increase in sales.

And Still Growing.

This is the record of the

REMINGTON
Typewriter.

REMINGTON TYPEWRITER CO.,
New York and Everywhere.

IMPORTERS

In All Parts of the World:

We can offer you the exclusive agency for our "Kee Lox" hard, clean, non-grease carbons in your country, and we call your special attention to the fact that these carbons possess such superior merit that we know they are just what you have been looking for.

These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

Furthermore, the "Kee Lox" carbons improve with age, so that the longer they are kept in stock the better they become. Hence, they can be imported in large quantities at one time without risk of loss in deterioration of quality.

Samples and further information, together with our proposition, will be gladly furnished on application to the

Kee Lox Manufacturing Company,

ROCHESTER, N. Y., U. S. A.

GOLD MEDAL, ST. LOUIS,

1904

**VISIBLE
WORK,
1885.**

WORK IN SIGHT.

**VISIBLE
SUCCESS,
1905.**

THE only Standard Typewriter with changeable type, and the only Standard Typewriter where you do not have to pound the keys to produce results. The blow of the HAMMOND is automatic, hence the results are uniform; this is what every operator wants.

The

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167 BROADWAY, - NEW YORK.

Demand for American Cotton Cloth.

CHINA, India, South America and the Philippines are at present bidding against each other in the American market for cotton cloth and print goods, and the outlook for the export trade in manufactured cotton goods was never so bright. A part of this demand, especially that from South America, is caused by the curtailment of production by the English spinners; another explanation, however, is given by a Rio de Janeiro merchant, who has been a buyer in the American market the past month. He states that for some months past the English manufacturers have been offering the trade in South America a quantity of goods made to imitate the well-known brands of American mills, and that the goods had been purchased to some extent, owing to the fact that prices were lower than the market here afforded. The goods have not lived up to the requirements of the Brazilian market, as they were sized and did not wear satisfactorily. The American mills had succeeded in displacing foreign-made prints to a large extent and it was to regain their trade that the English manufacturers resorted to the device of adopting American styles and tickets. Now the Brazilian merchants, so this representative stated, are eager to purchase American prints, which they know to be of standard grade and certain to give satisfaction. Other inquiries for the prints made in American mills are being received from the South American republics, and it is thought that a fair quantity of goods will be shipped south in the coming weeks of the spring.

Orders from China have been plentiful during April and show such a healthy percentage of increase as to encourage the exporters in their efforts to establish trade relations in the Orient and to prepare them for a large expansion by reason of their ability to meet the demands of the Chinese merchants in credits, packing and sales conditions.

The demand for prints from the Philippines has increased rapidly during March and April, and merchants are now working with might and main to straighten out the Philippine tariff revision. All orders being shipped now are to be entered at Manila, subject to a revision of the tariff.

A large demand from India and Red Sea ports for cotton goods have been received during April, showing that American exporters are securing the favor of the merchants of those countries and availing themselves of their advantage in prices and superiority of goods.

Superiority of American Warships.

RUSSIA is looking to the United States to rebuild its shattered navy, having placed a large number of orders with Mr. Lewis Nixon for submarine boats and battleships. He is now at Sevastopol instructing Russian officers how to navigate the submarine boats built by him.

Now Messrs. Charles M. Schwab and Charles R. Flint have been called into consultation by the Russian admiralty, and it is announced they will have the spending of $100,000,000 for new Russian warships, armaments and ammunition. The orders are to be distributed among Russian and American builders, but most of the material is to be furnished by Americans, who will also send skilled mechanics to the Russian shipyards to help build any vessels that may be there laid down.

This indicates that, after thorough investigation, the Russian naval authorities have found American warships to be the best built and the best equipped. Therefore, the new navy will be built by the best shipbuilders in the world.

Japan is also convinced of the superior merits of American vessels, for she has asked Mr. John Holland, inventor of the Holland submarine boat, to visit Japan and consult with the Government concerning the future construction of this type of vessels.

Mr. Holland is said to have built a number of these boats secretly at Newark and Jersey City for Japan, under new plans and with improved devices. They were shipped to Japan in sections and there put together. Mr. Holland has received information that the trials were successful and he will go at once to Japan for further consultation.

Turpentine Export Company Organized.

THE organization of a great export company to handle the American output of spirits of turpentine is under way. Naval stores men, representing an annual output of 300,000 barrels of turpentine, from Georgia, the Carolinas and Florida, recently met at Jacksonville, Fla., and decided upon this plan to handle the trade.

At this meeting it was announced by the factors, that for good and sufficient reasons, the contract heretofore existing between the exporters and factors had been abrogated, and it was for the best interest of both operators and factors that they organize a company to dispose of the yearly output to consumers in all parts of the world. As a result, an export company, with a capital of $100,000, was authorized. Operators will hold 75 per cent. of the stock and factors 25 per cent.

The company will be known as the Naval Stores Export Company, with headquarters at Jacksonville. Large tanks are to be purchased or built at the leading South Atlantic and Gulf ports, and all turpentine will be shipped direct to these tanks and then distributed throughout the world.

—The Frank Zolter Steamship Company has been organized in New York to carry immigrants between Mediterranean ports and the United States. It is capitalized at $2,000,000.

Chamberlain Praises Roosevelt.

THE constant efforts of President Roosevelt to expand American trade and extend the commercial influence of the United States throughout the world is one of the best signs of American progress. The President is a strong advocate of "the open door" in China and other Asiatic countries, and is bending all his energies to secure closer commercial relations with the Dominion of Canada. He is opposed to any form of organization that tends to restrict international trade.

Probably the best compliment ever paid to President Roosevelt upon his commercial attitude is that of the Hon. Joseph Chamberlain, in a speech before the Liberal Unionist Club at London, England, who said:

"At the present moment the President of the United States is one of the ablest, one of the strongest, and one of the most courageous men who ever sat in the Presidential chair. He is a patriot, and he has openly declared that one of his great objects and desires is to connect the United States more closely with our Dominion of Canada by reciprocity.

"I do not know what success he may have with his countrymen, but certainly they are in a position to offer very favorable terms to the Dominion. If we reject the idea of considering a similar proposition made to us, is it too much to expect that Canada may turn in another direction?"

In sounding this keynote of alarm, Mr. Chamberlain is wise. If anything practical can be done to bring the commercial interests of the United States and Canada closer together, President Roosevelt and his advisers will do it.

Canada is dependent upon the United States for many necessities and her geographical position warrants every effort that is being made. There is no reason why the trade between the two countries should not expand. Of course, political expedients must be observed, but when it comes to the common good all questions of nationality can be profitably and sensibly sunk and the welfare of the citizens of both countries promoted.

Electric Railroads for China.

AN extensive electrical railroad system for the richest provinces of China is planned by Charles H. Baker, of Tacoma, who will sail for China this month to arrange the preliminaries. The Chinese Minister at Washington has approved the tentative plans laid before him by Mr. Baker, and assures him that the Chinese Government will lend its encouragement to the scheme.

The plans outlined are for a third-rail electric system between all important Chinese centers. The power is to be obtained by utilizing the falls of the various rivers to generate electric current. These falls are many and powerful and all the electrical energy needed can be obtained at a small cost.

Mr. Baker claims to have a powerful combination of New York and Chicago capital back of him, and says he is able to carry out his scheme just as far as he is permitted by the Chinese Government.

Another scheme auxiliary to the electric roads is the placing of electric motor boats on the Chinese interior rivers and canals. American electrical manufacturers are back of this plan, which contemplates the building of the hulks of these boats in China and their equipment with American motors, machinery and interior fittings.

Electric railways and motor boats on the rivers carrying freight into the interior of China will greatly stimulate foreign trade, and if they are of American construction they will benefit American manufacturers by demonstrating the superior construction of American manufactured machinery.

The Open Door in the Far East.

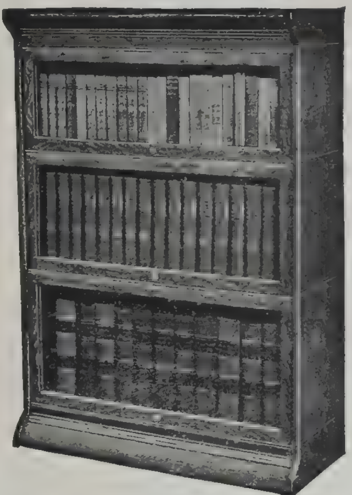
"AMERICA stands for the open door in the Far East," declares the Hon. Seth Low, former Mayor of New York City and ex-president of Columbia University. Mr. Low is a close student and a deep thinker; he has watched the trend of the American policy and speaks advisedly.

The struggle between Russia and Japan for supremacy in Manchuria must soon end. Regardless of the final issue of the conflict, the United States Government insists upon "the open door, with an emphasis that has already been greatly influential. It is likely to stand for that idea as earnestly and persistently as may be necessary."

When the ending of the war shall remove the menace to commerce there will be a rush of trade to the Orient. China, Japan, Corea and Manchuria will be in the market for all kinds of manufactured articles, as well as for the raw products. The attitude of the United States has been such that naturally the traders of those countries will look to her for a large proportion of their needs. The superiority of American products will influence the buyers and closer trade relations may be expected in the future.

A New Ocean Map.—The ocean map authorized by the International Congress, held in Berlin in 1899, will be issued during May, in the form of an album of twenty-four pages. In 1903 the commission appointed by the Berlin Congress met at Wiesbaden, with the Prince of Monaco as president. Six chartographers were at once set to work, and at the International Congress of Geography, held at Washington, September 13, 1904, the first installment was approved. The work was continued by the Prince of Monaco under the supervision of M. Charles Sauerwein and Professor Thoulet, who made the calculations.

Knock-Down Office and Home Furniture for Export.
The "GUNN" K. D. Sectional Bookcases.



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6¾ cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10½ inches deep and 32½ inches long. Made of selected quarter-sawed oak and handsome polish finish.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.

THREE-SECTION CASE, as shown, complete - - each $10.76
SIX-SECTION CASE, as shown, complete - - each $17.98

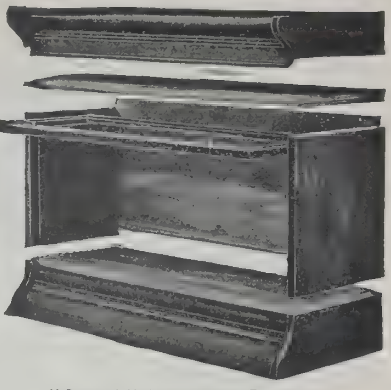
IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

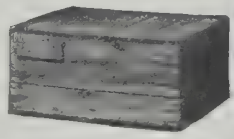
Western Union and A. B. C. Codes used. Cable Address: "GUNN," Grand Rapids.

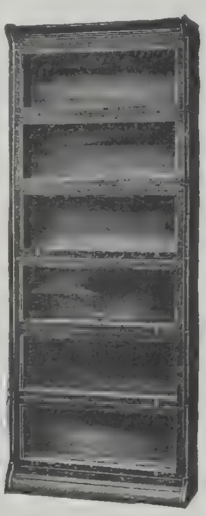
We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) **construction.** It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.





SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

BENTLEY & GERWIG FURNITURE CO.,

Manufacturers of the

BEST OFFICE DESKS AND WARDROBES IN THE WORLD FOR THE MONEY.

THAT'S ALL WE CLAIM.

Export our specialty. Our patented knock-down device makes it easy to set up our Desks in 10 minutes.

POSITIVELY GUARANTEED TO BE THE BEST DESKS IN THE WORLD.

Prices range from $10.50 to $40.00 on Roll-Top Desks and from $7.25 to $17.50 on Flat-Top Desks. Wardrobes from $5.75 to $19.00.

All prices are for goods packed for export. Write for catalogue.

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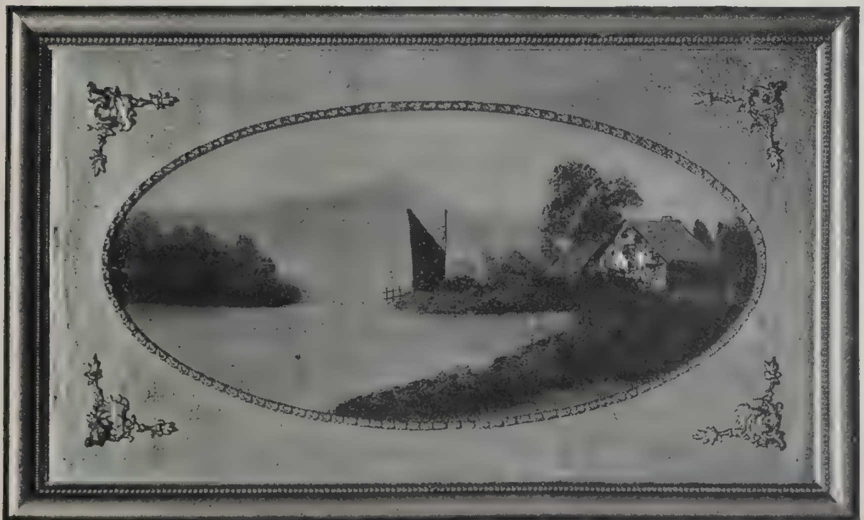

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No. 1822. 16 x 28; showing Pearl Oil Painting on Glass; 1½-inch Gilt Frame and Gilt Mat; **$16.20** net per dozen, assorted subjects.

To Stamp Out Impure Canned Goods.

AMERICAN canned goods in the future will bear the stamp of purity and be guaranteed by the canner, which guarantee will be backed up by the new "National Association of Packers of Pure Canned Goods," organized at Buffalo, N. Y., last month. This organization is the outcome of the pure food agitation that has been carried on in the United States for a number of years, and the action of several foreign governments making such restrictions as practically to bar out of their markets American canned goods. Thus the honest packers have suffered for the misdeeds of the dishonest, not only abroad, but in the home markets as well.

The new Association intends first to restore public confidence in the purity of the goods sold by its members; and second, it will assist the United States Government in detecting and punishing all persons canning or selling impure or adulterated goods.

This movement will have the hearty and generous support of every honest packer of canned goods in the United States and will be welcomed by the foreign trade. Hereafter the foreign merchant may buy American canned goods, guaranteed to be pure and wholesome in every respect by a powerful association, whose guarantee can be relied upon absolutely. With the co-operation of the best interests in the canning industry the objects and aims of this new Association can be carried out to the letter.

It is believed that every packer of pure canned goods will be compelled to join the organization because of its policy to give all customers all the information obtainable about canned goods, and because the stamp of the Association on goods carries with it the guarantee of reliability. This latter fact, it is pointed out, will cause buyers to discriminate in favor of goods bearing the Association's trademark and force canners to become members of the new organization.

A rigid investigation of the standing and reliability of each applicant for membership is made, and no packer is admitted unless his reputation is first-class and his goods known to be pure and properly packed under the best hygienic and sanitary conditions.

A laboratory for the chemical inspection of all canned goods is to be established, and when goods are found to be impure that fact will be reported to the health authorities and the analysis furnished to assist in prosecuting the guilty packers. Where the laws are not sufficiently stringent, the Association plans to secure new legislation, both national and State, and hopes in this way to stamp out the criminal canners and build up the reputation of American canned goods, so that when it is merely described as "canned in America" it will be known as absolutely pure and reliable. In this way the Association hopes to build up foreign trade, much of which was lost through the exposé of adulterations in the foods by the Department of Agriculture of the United States, numerous college authorities, and especially Professor Wylie.

A department of publicity also is to be established to spread broadcast throughout the world the result of all investigations made, the prosecution and conviction of fraudulent packers and the ways and means adopted to make American canned goods the world standard of purity and reliability.

Gasoline Supply Decreasing.

ANOTHER warning that the supply of gasoline is growing shorter has been sounded by the Standard Oil Company. Owing to the phenomenal increase in the consumption of gasoline for heating, lighting and power, due to the many new forms of stoves, lamps and engines, the demand has gone up to an extent not expected. The supply at present is hardly equal to the demand and the multiplicity of new machinery calling for its use will soon create a demand far exceeding the supply.

A few years ago gasoline was hardly salable. The gasoline stove was put on the market and its use pushed by selling agents of the oil companies and a good demand created. Then the gasoline lamp which makes and consumes a gaseous form of gasoline was invented. Its bright light was hailed as a boon in isolated places and gasoline sales mounted upward. Next the gasoline engine was perfected, and with it came the automobile and motor boats. This at once caused the demand to jump upward. Municipalities then began its use in street lighting and now the supply is hardly adequate. The increased production of petroleum, due to recently discovered new fields, temporarily made up the shortage, but now the increased demands compel the Standard Oil Company to renew its warning.

Every manufacturer or owner of gasoline using machinery is interested in this new trade condition. It means that higher prices are bound to prevail unless the production of petroleum increases rapidly.

In refining crude petroleum only from 8 to 1 per cent. of naphtha is produced, depending on the gravity of the oil. From these naphthas only about 50 per cent. of gasoline can be obtained, so that the maximum production of gasoline is limited to an average of 5 per cent. of the crude oil refined. But the actual production of gasoline is limited in other ways. As soon as the refiners discover that they are glutting the market on the principal petroleum products —kerosene, paraffine and lubricating oils—they cease refining. It is stated that this condition is imminent, as there has already accumulated a very great surplus, particularly of refined oil, and the refiners will not continue to make and store such surplus for the sake of producing the small percentage of naphthas, no matter how great many be the demand for this class of product.

The immediate remedy for the excessive demand for gasoline is likely to be sharp advances in price until the price becomes prohibitive for ordinary purposes, the high prices being maintained until the production can catch up with the demand and an equilibrium be restored. Another remedy which is being exploited by the Standard Oil Company is the manufacture and sale of stoves that burn kerosene instead of gasoline. The manufacture of oil-burning engines, in which the oil is vaporized in hot tubes and the resulting gas exploded similar to the gasoline engine, is also receiving the encouragement of that company. Efforts are also being made to perfect oil-burning automobile engines. Makers of gasoline lighting systems for home, stores and towns are charged with working the greatest damage in proportion to the success of their operations, because every system they install reduces the consumption of the too plentiful kerosene, and substitutes for it a product that cannot be made without producing six or seven times its volume in the kerosene which it displaces.

Japan's Loan to Be Spent in the United States.

IT now transpires that the main object of the $150,000,000 loan recently negotiated in New York and Europe, $75,000,000 of which was taken in the United States, was to keep up a specie reserve in foreign countries for the maintenance of international trade. As a result the gold may not be exported at all, but may be expended for war materials, machinery and other supplies that Japan needs from time to time. In other words, the $75,000,000 raised in the United States may be all spent for American products. The Japanese legation at Washington is authority for these facts. The statement given out by the legation is as follows:

"The fourth domestic loan has been issued only recently in Japan, followed by the issue of the foreign loan of $150,000,000 in London and New York, might give rise to some misapprehension as to the reason for such successive issues of loans in such a short space of time. The fact is, however, that all these loans form a part of the war fund which aggregates $390,000,000, as appropriated in the budget for the present fiscal year, and the contemplated domestic loan of $50,000,000 is a part of the $100,000,000 loan, for which an arrangement was made already with the bankers in March last.

"The Government has formulated its financial scheme with especial consideration, on the one hand, to the period at which the subscriptions to the loans are to be paid in, and, on the other, to the amount of the war expenses to be defrayed each month. The main object of the foreign loan is to secure the stability of the specie reserve which is essential for the maintenance of facilities in the international trade. The object of the domestic loan is to meet the war expenses, the major portion of which is paid in Japan itself, and thus to prevent the expansion of the convertible notes and the consequent rise in prices.

"The proceeds of the $75,000,000 loan will remain on deposit for an indefinite time. A part, at least, will go for the purchase of army and navy supplies."

Increased Trade with Cuba.

AMERICAN trade with Cuba continues to show a decided increase, which indicates the growing prosperity of the merchants and planters of that island republic and the desire to become commercially closer to the United States. During the eight months ending March 1st the United States bought from Cuba goods valued at $42,260,359, as against $36,230,060 in the corresponding period of last year. At the same time the Cubans bought from the United States $24,126,687, as compared with $16,898,884 a year ago. This is a larger amount than in any corresponding year in the history of the trade.

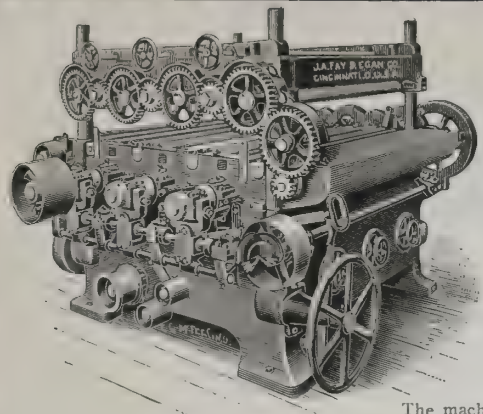
Compared with the same period a year ago, the exports show an increase of more than 42 per cent., while the imports increased 16 per cent., the greater percentage being sugar.

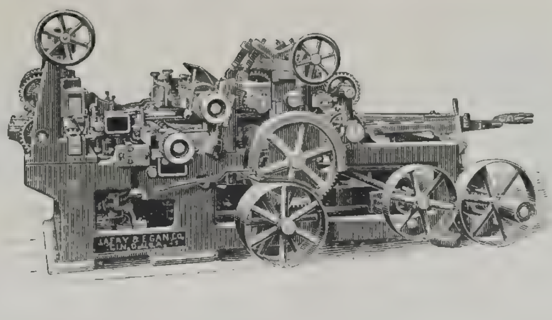
American machinery and railroad supplies are in increasing demand in Cuba, owing to the rebuilding of the ruined mills and to railroad extension. There is a large increase in the volume of all kinds of goods going to Cuba.

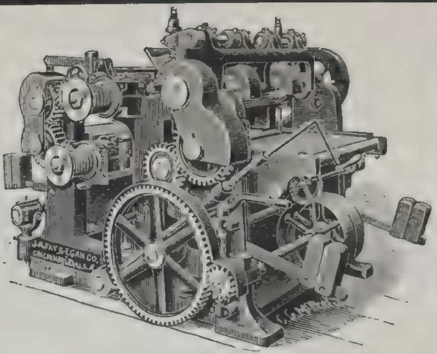
Reports show that business is flourishing throughout the republic, and that Cuba is entering upon a period of prosperity that will soon be reflected in still larger trade intercourse.

Gasoline Motors for Railroad Work.—A gasoline motor railroad car built to accommodate twenty persons and their baggage has been put in operation on a branch line of the Union Pacific Railroad in the State of Nebraska. The preliminary tests and the car's work in actual operation have been so gratifying that contracts have been let for a number of cars, each to carry fifty-five passengers and baggage. The railroad officials believe these gasoline motor cars will revolutionize the suburban and branch railroad business in both passenger and freight service. The motors have sufficient power to haul two "trailer" cars. The expense of operating is very small. This experiment will be watched with interest the world over, for if it proves to be effective, efficient and economical it means the construction of many miles of light railroads in countries where the building of heavy steam roads would not be profitable. The fuel question will be solved, as oil can be transported easily and cheaply and the supply required is small.

Good Outlook for Export Copper.—The export outlook for copper indicates that the shipments from the United States for the first four months of this year will equal, if not exceed, the exports made for the corresponding months of last year. European consumers within the past few days have been buying more freely.







The machines here shown will give you a general idea of the line of wood-working machinery we make. We furnish all sizes, single tools or entire outfits, anywhere on earth.

They are in use throughout the world, by governments, corporations and individuals. Highest prizes everywhere exhibited—the last at St. Louis, 1904. Largest firm in the world making exclusively wood-working machinery. Established 75 years; employ 1,200 workmen.

Each tool simple, efficient, safe, fast and strong; each fully tested before shipping, and each fully guaranteed for its particular work.

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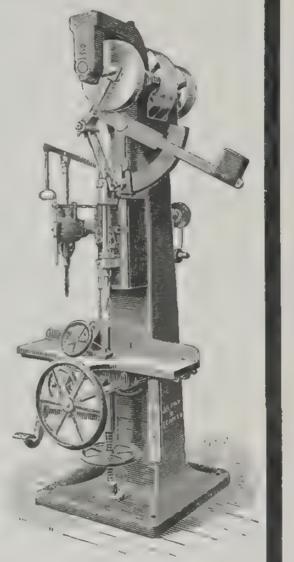
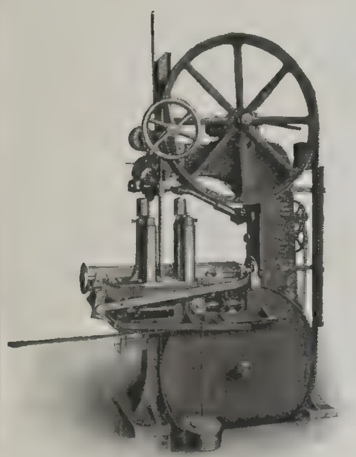
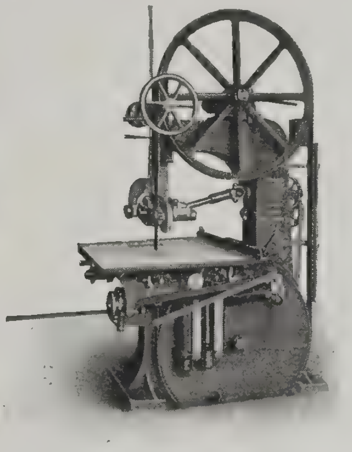
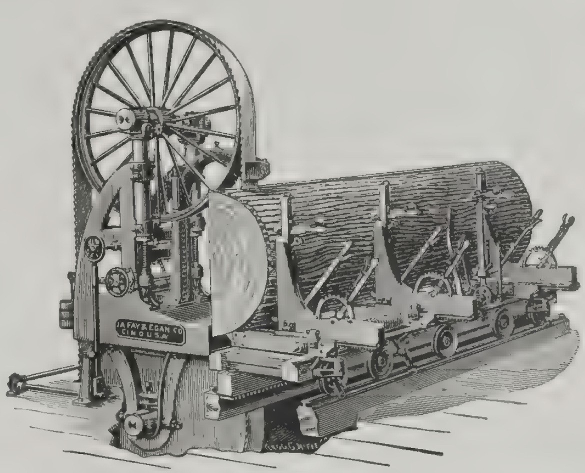
Correspondence invited; our experience and advice at your disposal. Agencies throughout the world.









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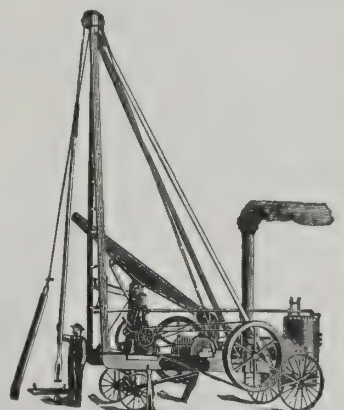

Is the most strongly built, the simplest and the most economically operated machine in the market...

Any man of average intelligence can run this machine. No experience is required.

H. A. Richard & Bros., of Marlboro, Ohio, say: "It is a fast driller and the best pipe driver in the market. It is giving us perfect satisfaction."

Duff Bros., of Darlington, Pa., write: "We have been able to drill at a price so low that no other machine could compete with the STAR. Expense for repairs comparatively nothing."

Star Drilling Machines are made in ten sizes. Will drill 250 to 2500 feet.

We also manufacture Drilling and Fishing Tools.

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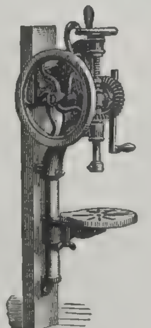


Fig. 742. No. 12.

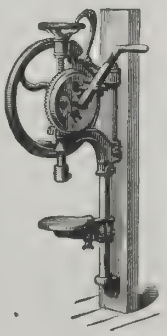


Fig. 731. No. 1.

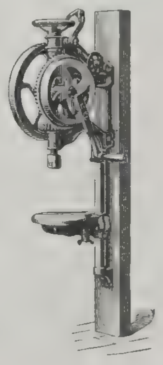


Fig. 732. No. 2.

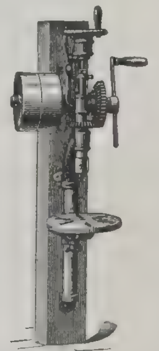


Fig. 746. No. 12

Four Leading Sizes of Blacksmiths' Drills.

WE HAVE 10 OTHER SIZES.

They are reliably constructed, light-running and work perfectly.

CATALOGUES IN ENGLISH AND SPANISH.

Rice Industry of the United States.

As the United States has become a rice exporter, the foreign buyer will be interested in the extent and value of this feature of American agriculture. The export trade has increased 50 per cent. in the last year, exceeding the importations by a large percentage. In 1904 the importations of rice into the United States amounted to 137,000,000 pounds, as against 178,000,000 in 1903, a decrease of 41,000,000, while the exports of rice (including shipments to Hawaii and Porto Rico) were 138,000,000, as against 92,000,000 in 1903. In 1903 the purchases of foreign-grown rice by the United States exceeded its sales of that staple abroad by 86,000,000 pounds, whereas in 1904 the sales abroad slightly exceeded the importations of rice.

Mr. Sherman Bell, the British Commercial Agent at Chicago, has made a lengthy report to his Government upon the history and growth of the rice business. The following extracts are taken from his report:

"Rice cultivation in the United States has become an important industry. During the fiscal year 1899 the production was 250,280,221 pounds; the land under rice cultivation was 342,218 acres. This year it is calculated that the yield will be about 470,000,000 pounds, the land planted with rice being 643,400 acres. Notwithstanding this large increase, it is still insufficient to meet the home demand.

"Before 1860 the rice production in the United States was practically limited to the alluvial lands of the Carolinas, Georgia, Florida and Louisiana. When labor conditions were altered after the Civil War the production in the Eastern States decreased considerably. When machinery was adapted to rice production and it was discovered that the prairie lands of southwestern Louisiana and southern Texas, with their impervious subsoils, would dry before the rice harvest sufficiently to support machinery, there was a revolution in the rice industry.

"Fifteen years ago there was scarcely a barrel of commercial rice produced in what is now known as the prairie rice section of Texas, which extends 400 miles along the Gulf coast, and contains some of the most fertile lands on this continent. These lands were then valued at 25 cents to $1.50 per acre. To-day improved lands are worth on an average $12.50 per acre. Within the territory there are about thirty rice mills with a daily capacity of over 20,000 barrels of rice.

"By 1898 the canal and the deep-well system of irrigation had been satisfactorily tested, and the rice industry was rapidly extending along safe lines. At this date it was found that too large a percentage of the machine-handled rice was liable to breakage in milling. The attention of the United States Department of Agriculture was called to this fact, and measures were immediately taken to remedy the defect and overcome the difficulty by the introduction of new varieties. The Department's work resulted in the introduction of a variety from Japan known as Kiushu, which has given very satisfactory results.

"Japanese growers consider the following points important for the successful growing of rice: 1. The seed should be pure bred; of even quality and size of grain. 2. Any light or imperfect grains should be removed. This is done in Japan by soaking the seed rice in water several days till it is about ready to sprout, when it is thrown into salt water of 1.3 specific gravity and allowed to remain two minutes, being gently stirred meanwhile. The light grains will float, the others are removed, washed in cold water and planted. When a seed drill is to be used the damp seed is first dried by being rolled in the ashes of rice straw. 3. Even sprouting of the grains is very essential to even ripening of the crop. This is accomplished by previously soaking the seed as above stated.

"The seed is sown in March and April. A later crop is sometimes sown in June. For this the white seed is used on account of early maturity.

"In a report issued by the Census Bureau, June 23, 1902, and covering eighty establishments, it is shown that since 1880 the number of rice mills in the United States increased 264 per cent., capital 363 per cent. and value of products 178 per cent. This report noted that the increase in Louisiana and Texas was very marked, their production having advanced from 75,753,856 pounds in 1890 to 179,919,203 pounds in 1900. The statistics indicated that the industry is being transferred from the south Atlantic States to Texas and Louisiana, and later reliable statistics have pointed out a continued change in this respect.

"The effect of successful irrigation on the prairie lands was a rise in value of such lands. In 1888 these lands could be obtained from $1 to $3.50 per acre, according to their facility for cultivation. Some of these same lands are now held at an average price of $30, and a few choice locations bring as much as $50 per acre.

"Before the Civil War the planter realized 4 or 5 per cent. on his investment in the rice business, valuing his slaves employed at from $500 to $800 per head and reckoning them as part of his investment. The planter now realizes from 6 to 10 per cent. on the investment.

"The following is a comparison of the value of rice lands with wheat lands in various States:

Rice coast country	$20.00
Wheat:	
Indiana	3.71
Illinois	8.32
Iowa	9.20
Kansas	9.73
Missouri	7.88

"The following figures on the expense and profits of a 1,000-acre rice farm may be taken as accurate:

Estimated cost of land, improvements and equipment	$32,500
Cost per year for operating farm after improved	13,650
900 acres of rice, yielding 45 bushels of 45 pounds each, rough rice, per acre, sold at 85 cents per bushel	34,425
Net income after deducting annual expenses	20,775

"Dividing up the investment among six farmers, each would pay $5,416 and would own 166⅔ acres of land, one-sixth of machinery, canals, fencing and levees, one house, stable and well, four mules and one set of implements. The share of each farmer in the gross earnings would be $5,737 and his share of annual expenses $2,275, leaving the net profit $3,462."

What the Nations Drink.

The United States is the greatest drinker of coffee in the world. The United Kingdom consumes the most tea, while Germany leads all other nations in beer-drinking. Russia uses the most whisky and distilled spirits, and France consumes the most wines.

An interesting statistical table giving the facts and figures has been prepared by the United States Bureau of Commerce and Labor. Statistics are presented relative to the United States, the United Kingdom, France, Germany, Russia, Spain, Italy, Austria-Hungary, Portugal, Chile and Argentina.

Tea consumption in the twelve countries named aggregated in 1904, or the latest available year, over 510,000,000 pounds. Of this the consumption in the United Kingdom was 256,500,000; Russia, 127 1-3 millions; United States, 109 2-3 millions; Germany, 7,000,000, while in no other country for which these statistics are available is the annual consumption as much as 3,000,000 pounds—that of Austria-Hungary being 2 2-3 million pounds; France less than 2,500,000 pounds; Chile, about 2,000,000 pounds; Argentina, 1 4-5 millions; Spain, 333,000 pounds, and Italy, 115,500 pounds.

Of coffee the world's consumption is approximately 2,250,000,000 pounds. In this the United States, as already indicated, holds the first place, with a total consumption in 1904 of 961,000,000 pounds; Germany, second, 397,000,000; France, third, 168,000,000; Austria-Hungary, fifth, 108 2-3 millions; Italy, sixth, 39,000,000, and the United Kingdom, seventh, 292,500,000 pounds. In the other countries coffee consumption is less general, being 22,000,000 in Spain, 21,000,000 in Russia, 18,500,000 in Argentina, 6,500,000 in Portugal, and 5,500,000 in Chile.

The statistics of beer consumption are available for only eight countries, with a total of 5,753,000,000 gallons annually. Germany had a total consumption of 1,783,000,000; the United Kingdom, 1,501,000,000; the United States, 1,494,000,000; Austria, 492,000,000; France, 289,000,000; Hungary, 38 1-3 millions, and Italy, 6¾ millions.

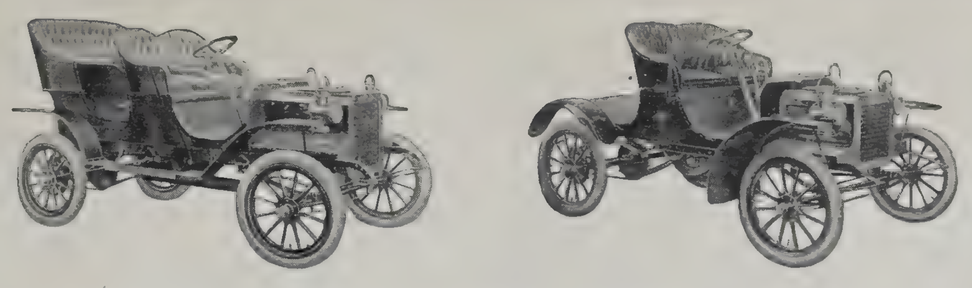
Wine consumption in the nine countries, for which statistics are presented, amount to 3,090,000,000 gallons annually, principally in the Latin countries. France alone consumes 1,343,000,000 gallons annually; Italy, 928,500,000; Spain, 331,500,000, and Austria-Hungary, 231,000,000. Figures from Russia are not available. Germany consumes 124,000,000 gallons of wine annually; Portugal, nearly 72,000,000; the United States, 43 1-3 millions, and the United Kingdom, 16 2-3 millions.

The per capita consumption of the various beverages in the principal countries presents some sharp contrasts. Thus, in the per capita consumption of tea the United States is credited with but 1.34 pounds, as against 6 pounds for the United Kingdom, while in the other countries presented the annual consumption per head of population is in each case less than one pound, Russia being credited with 0.92; Chile, 0.62; Argentina, 0.37; Portugal, 0.14; Germany, 0.12, and France and Austria-Hungary each, 0.06 of one pound.

In the per capita consumption of coffee the relative rank of the countries named is: United States, 11.75 pounds per head of population; Germany, 6.65 pounds; France, 4.29 pounds; Argentina, 3.81 pounds; Austria-Hungary, 2.33 pounds; Chile, 1.72 pounds; Spain, 1.18 pounds; Italy, 1.17 pounds; the United Kingdom, 0.69 pound, and Russia, 0.15 pound. Of beer the per capita consumption in the latest available year was as follows: United Kingdom, 35.42 gallons (thus exceeding Germany with her 30.77 gallons); Austria-Hungary, 20.36 gallons; United States, 18.28 gallons; France, 7.41 gallons, and Russia, 1.08 gallons.

The per capita consumption of whisky and spirituous liquors is far more uniform in the countries under consideration: Austria, with 3.09 gallons per capita; Hungary, 2.19 gallons, and Germany, 2.11 gallons, being the only countries with an annual consumption in excess of two gallons per capita, and Italy, with 0.34 gallon per capita, was the only country to fall below one gallon in its annual consumption per capita. The United States (1.48 gallons), United Kingdom (1.38 gallons), France (1.85 gallons) and Russia (1.26 gallons) differ little in their per capita consumption of distilled spirits. In wine, however, the per capita consumption varies greatly among the various countries, from a minimum of 0.39 of one gallon in the United Kingdom to 34.73 gallons in France, while the other countries, arranged in the ascending scale, stand: United States, 0.53 of one gallon; Germany, 2.08 gallons; Hungary, 3.75 gallons; Austria, 5.85 gallons; Portugal, 14.12 gallons; Spain, 17.82 gallons, and Italy, 28.06 gallons.

Canadian Duty on Binder Twine.—Canadian manufacturers have asked the Dominion Parliament to put a 20 per cent. duty on binder twine, to protect them against the United States product, which can be sold with profit at a much lower price than the Canadian manufacturers can produce it.



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16 H. P.; 1,500 lbs.; seating five passengers, with detachable side-door tonneau; speed, 35 miles per hour; price, $1,250

The REO Runabout
900 lbs., 8 H. P., $650, is smaller and lighter, but just as real as the touring car

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It was designed and built by a man who for twenty years has been producing real engines, motors that mote and cars that go.

You can count on its smooth and certain operation day after day, week after week and month after month, as surely as if it were a stationary engine. Every smallest piece of the entire mechanism is so designed that it takes care of its particular work with the same ease, durability and reliability as the strongest part.

Its faultless construction and perfect lubricating system insure you against the vexatious road troubles common to far more expensive cars.

REO power and speed are real; REO economy is real (in maintenance as well as price); and REO enjoyment is the real thing.

Send for Catalogue Which Explains Both Cars

The REO Motor Car Co.

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WHITE STEAM CARS

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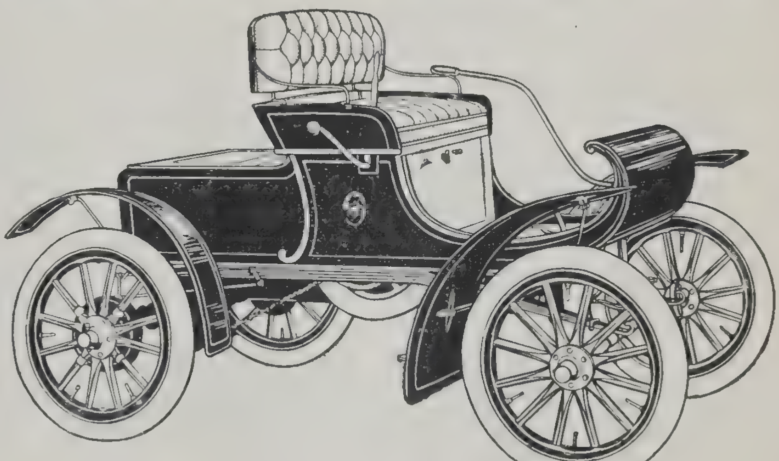

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The only light car awarded a gold medal at the Louisiana Purchase Exposition. Low price, high quality and immense factory output has made our car the most popular and best known in the world. No improvement is lacking. Our delivery cars are a most attractive business proposition. Write for Catalogue 100, describing our full line of cars. Printed in English, French and Spanish. State edition preferred.

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DETROIT, U. S. A.

Member of the Association of Licensed Automobile Manufacturers

Planters Expect Ten-Cent Cotton.

THE cotton planters of the South have agreed to restrict the acreage to be cultivated this year in order to keep down the output and allow the markets of the world to absorb the 2,000,000 surplus bales left over from the last crop, and thus keep the price sufficiently high to make cotton raising profitable.

The Southern Planters' Commission Holding Company has arranged to carry the 2,000,000 bales surplus until September 1st before allowing it to be marketed. This company has a capital of $50,000,000, and it is backed up by about fifty Southern and Eastern banks. One bank in each of the 812 cotton-producing counties will act as fiscal agents of the corporation, which authorizes an advance of $25 per bale to the planters who are members of the Southern Cotton Association. In this way the planter will have sufficient money to plant and pick the 1905 crop and still hold a specified percentage of his 1904 crop until September 1st or later.

Some scheme for unloading the cotton on the market is yet to be devised, but the people of the South demand that the price be fixed at 10 cents for middling cotton. To secure this price it may be necessary to hold the cotton far beyond September 1st. However, as the manufacturers are clamoring for 7-cent cotton, well-informed factors believe that will be the ruling price.

In order to prevent the flooding of the market next fall, the pool, if need be, will arrange to hold a good share of this year's crop and the surplus over into next winter or perhaps the spring of 1906. Not more than one-third of the surplus is to be sold in any one month. If the planters succeed in forcing the price of the 1905 crop up to 10 cents it is feared in some circles that there may be a panic. The pool will try to prevent this through the local banks and the cotton association.

This is without doubt the greatest industrial pool ever attempted or dreamed of, and has for its object the forcible contravention of the law of supply and demand. It is not secret. It is as open as day. Five million persons, living in twenty States, are concerned in it. If successful, and there appears to be no doubt of it, it will be one of the most gigantic plans ever conceived and carried out.

W. P. Brown, who is at the head of the pool, says it is working smoothly. But little money is needed, as the local banks advance the money under the pool's guarantee that none of the cotton will be placed on the market. The planters turn in their cotton to the banks, take a receipt, draw money on the cotton, if they need it, and the banks and the pool do the rest. The cotton thus becomes the property of the pool and its sale and holding is absolutely in the control of the pool.

So far, the pool has demonstrated its ability to hold the cotton and keep up the price. This, of course, has had its effect on the manufactured cotton goods market and has tended to keep up and stiffen the prices. The continued increasing foreign demand for both the raw material and manufactured goods has helped make money for the manufacturer and the dealer.

To Guard Against Electrical Accidents.

THE French Industrial Association will hold a congress in Paris in June to examine and investigate apparatus designed to protect workmen against death by electrical shock caused by imperfections in, or accidents to, high-tension electrical conductors. A prize of 6,000 francs has been offered to the inventor who devises an apparatus that will do away with this danger by indicating that a wire is alive or dead.

It must be equally applicable to direct and alternating currents of all voltages and must be reliable and incapable of doing damage to itself, the operator or the distribution system under any circumstances. But his success will mean a very great boon to those men whose work brings them into close proximity to high-potential electric wires and machinery. Now that a current of 60,000 volts has become practicable and is much employed for long-distance transmission, this enormous potential being coupled with large quantities of the electric fluid, the danger to the electrician and to workmen who must be employed in caring for such a line and for the apparatus at its ends has become a very serious matter. Danger through carelessness cannot be remedied by any apparatus, perhaps, but such a device as that proposed by the French congress would give timely warning which would save many lives.

A safety device has been put on the American market that will protect persons from the electric current upon the breaking of a trolley wire. The current is cut off and the wire rendered harmless the moment a break in the circuit is made. The device consists of an ordinary connecting bar held in its proper position by the strain on the trolley wire and is fitted to each section of the wire. The moment this tension is released by the breakage of a wire the current is instantly cut off without producing any sparks.

Wrecking the St. Louis Fair.

THE work of erecting and removing the buildings of the World's Fair at St. Louis is going rapidly forward. A Chicago wrecking company paid $450,000 for the buildings, fixtures and materials, the original cost of which was $14,000,000.

By this purchase this company becomes possessed of 100,000,000 square feet of good building lumber, 200,000 square feet of sash lumber, 10,000 doors, 1,500,000 square feet of glass skylights, 3,000,000 square feet of iron and felt roofing, 4,000,000 square feet of burlap wall covering, 500,000 incandescent lights and a quantity of copper wire that cost $650,000.

In addition to this building material, the company secured two complete hospitals with modern equipment; a fire department with nine engines and 100,000 feet of hose, besides hooks, ladders, trucks, etc.; three greenhouses, each 300 feet long, filled with flowers and plants of all kinds; thousands of chairs, benches and seats; hundreds of desks, counters, tables and shelves; miles of iron and wire fencing; hundreds of wagons, carts, steam rollers, railroad cars and paraphernalia of a miscellaneous nature. A considerable portion of this wreckage will go to Portland, Ore., and to Jamestown, Va., where similar fairs are to be held in the near future; but most of the material will be used for buildings in the Central West.

The wreckers are proceeding rapidly with the task of dismantling the buildings, but it will require 1,000 men more than a year to complete the work, since the Exposition covered 1,240 acres.

America's Growing Wheat Crop.

THE American wheat crop of 1905 bids fair to become a record-breaker. From present indications it will exceed the bumper crop of 1902 by about 68,000,000 bushels. The Government statistician's report shows the condition of the growing grain to be 91.6 per cent. of a full crop. A calculation of the planted acreage on this basis gives a total yield of 479,787,000 bushels. The yield in 1904 was 332,935,000, and in 1903, 399,867,000 bushels. This shows an increase over last year of 146,852,000 bushels.

The immediate effect of this report on the Chicago Board of Trade was a drop of 2 cents per bushel; the outlook for the "bull" pool, now trying to corner the May crop, is far from bright. Well-informed brokers predict a much lower price for wheat and expect heavy demands from abroad for both wheat and flour, as a result of this immense crop and the expected decline in prices.

The fact that Spain has reduced its import duty on wheat is received with much satisfaction on the American exchanges, as it indicates an increased export business between the United States and that Kingdom.

Another source of expected demand is Russia. Grain traders believe the peasant uprising and the continued drain of field workers to strengthen the army will so reduce the grain crop of that empire that a strong demand will spring up for American grain and flour.

This record crop then comes in timely, as the United States has been consuming the greater portion of its farm products for the last ten years, the exports decreasing year by year. The surplus this year will no doubt be eagerly purchased by the European countries.

United States Tariff May Be Reduced.

A SEEMINGLY "inspired" telegram to the New York *Tribune* says that a general rearrangement and reduction in the present tariff law of the United States will probably be made at an extra session of Congress to be held this fall. The reason given is the decreasing revenue of the United States from imports and a growing deficit in the treasury.

The President and Senator Aldrich, chairman of the Senate Finance Committee, it is asserted, will take up the matter when the latter returns in June, and a special session of the Finance Committee may be called to outline a plan. The *Tribune* sums up the reasons of the President for desiring to lower the tariff as follows:

"Those who maintain that the time for readjustment has arrived point to the fact that when the Dingley act was enacted it carefully adjusted every schedule so as to afford ample protection to American manufacturers and producers, eliminating the difference between the cheap labor used in the production of foreign goods and the more expensive labor which is a factor in American products and at the same time afforded ample revenue to the Government. Now, it is maintained, the progress of the protected industries, the cheapening of methods of production and manufacture, and the development of the several lines of industry have combined to lessen the cost of production in certain instances, and the existing tariff rate is therefore prohibitive, with the result that the Government is deprived of possible revenue, while in some instances, perhaps, the manufacturer is enabled to charge a price for his goods out of proportion to the greater wages he is compelled to pay as compared with his foreign competitor. It is not maintained that there are many instances of this kind, or that there are numerous schedules which require readjustment, but that there are enough, if properly adjusted, to overcome the current deficit."

This indicates that the high tariff, instead of being protective, is becoming prohibitive to such an extent as to prevent the treasury from securing a sufficient revenue from the customs to meet the needs of the Government. In other words, what is needed is a tariff for revenue that will amply protect the manufacturer, but not shut out from the United States goods demanded by its people who pay the tax.

President Roosevelt and five-sixths of the Senate Finance Committee, it is said, favor this reduction at the earliest possible moment, in order to stop the increasing deficit. Just what attitude the American manufacturer will take is problematical, but it is intimated that a hard fight may be expected.

German Department Stores Import Direct.—A new factor in the export business is the German department store which is creating a big demand for American household appliances, such as egg-beaters, meat-cutters, carpet-sweepers, coffee-mills, etc. These department stores are now buying direct, whereas in the past such articles were purchased by large hardware stores at the seaports and by them sold to jobbers and retailers.

THE WESTERN CLOCK MFG. CO.

The "American" Watch,
Stem-Wind.

LA SALLE, ILL., U. S. A.

EXPORT OFFICE:

51 Maiden Lane, New York, U. S. A.

MANUFACTURERS OF

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ILLUSTRATED CATALOGUE SENT
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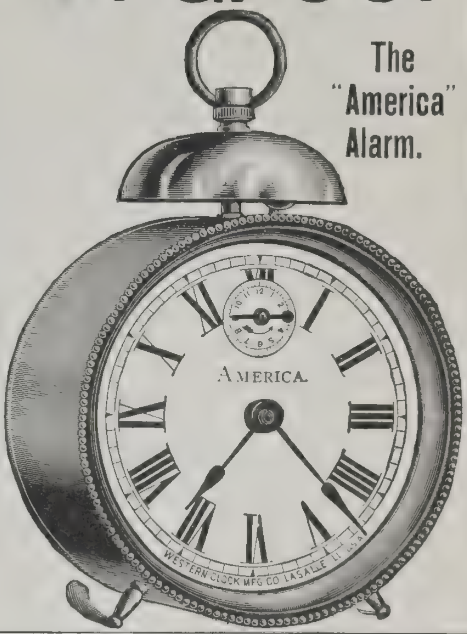
The "America" Alarm.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THE CHRISTIAN MOERLEIN BREWING CO. CINCINNATI, O.

BARBAROSSA

A Beer of unsurpassed quality and flavor the name *Moerlein's* is a guarantee of purity.

Brewed and Bottled by
THE CHRISTIAN MOERLEIN BREWING Co.
CINCINNATI, O.U.S.A.

AWARDED GOLD MEDAL at WORLD'S FAIR, ST. LOUIS, for BALL-BEARING WASHING MACHINES

COST: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at $6.62½=$26.50.

SELLING PRICE: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at $14.00=$56.00.

Net Profit Over 100 Per Cent.

FOREIGN MARKETS ONLY. Upon receipt of $26.50 in U. S. Gold, or its equivalent, we will pack, ready for transportation abroad, and deliver f. o. b. New York, Boston, Philadelphia or Baltimore.

Two "1900" and Two "1900" Junior Ball-Bearing Washing Machines.

Weight of the above four Washing Machines, 250 pounds.

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-two years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment,** but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water,** thus **forcing the water through** the **finest** or **coarsest fabrics,** causing the clothes to become **absolutely clean, without boiling or scrubbing, without wear or tear, and without the use of chemicals.**

Send us $26.50 for two "1900" and two "1900" Junior Washers TO-DAY. We will ship the washers same day that we receive your order. In acknowledging receipt of your order we will quote you price of washers in car-load lots. You will quickly convert your sample order of four washers into cash, with a profit of over 100 per cent.

THEN YOU WILL ORDER IN CAR-LOAD LOTS.

Orders received direct or through export commission houses. When ordering through the latter, please specify "1900" and send us duplicate of order.

The "1900" Washer Company,

BINGHAMTON, NEW YORK, U. S. A.

American Trade with Mexico.

COMMERCE between Mexico and the United States has grown with great rapidity, and large sums of American capital have been invested in various business enterprises in Mexico, including agriculture, mining, transportation and manufactures. On the other hand, Mexico is contributing each year more largely to the commercial requirements of the United States, especially in those articles and classes of articles not produced in this country, or at least, not produced in sufficient quantities to supply the demands of manufacturers or others in whose industries or business enterprises they are required.

Imports of merchandise into the United States from Mexico have grown from $4,346,364 in 1874 to $43,633,275 in 1904, the value of merchandise imported from Mexico in 1904 being therefore ten times as great as in 1874, or thirty years earlier. On the other hand, exports from the United States to Mexico have grown from $5,946,839 in 1874 to $45,844,720 in 1904, the exports to Mexico in 1904 being thus about eight times as great as in 1874.

The rapid growth of the production, industries and commerce of Mexico in recent years and the prospect for continuation of that growth is suggested by the fact that in the short period of twenty years its revenue has increased from $10,000,000 to $30,000,000, its imports from $20,000,000 to $75,000,000, and its exports from $7,000,000 to $43,000,000, exclusive of $40,500,000 of gold and silver. The investment of American capital in Mexico was estimated by United States Consul-General Barlow in 1902 at $500,000,000, nearly all invested within the last twenty-five years, and about one-half of it within the last five years. Since then the investment has doubtless increased materially. Such investments, by adding to the productive power of the land, must necessarily increase its purchasing power. Evidently Mexico is now, and is destined to be to an increasing degree, a customer whose wants and whose resources are eminently worthy of accurate study by American business men.

The growth of imports into Mexico during the period from 1893 to 1903 was, in the case of Spain, less than $1,000,000, France a little less than $2,000,000, Belgium a little more than $2,000,000, United Kingdom a little less than $5,000,000, Germany slightly less than $7,000,000 and the United States slightly below $15,000,000. The increase in imports from the United States alone was more than that of the increase from Germany, the United Kingdom and France combined.

As to the principal articles making up the grand total of $45,000,000 exports from the United States to Mexico, it may be stated that manufactures of iron and steel hold the highest rank; coal, second in rank; cotton and manufactures of cotton, third, while lumber, carriages and cars, manufactures of leather, manufactures of wood, chemicals, drugs and dyes, gunpowder and mineral oil are also important items in the table of exports to Mexico, and in practically every case show a gratifying growth.

New Printing Telegraph.

A NEW telegraph printer, used to transcribe Morse telegraph signals in English or other characters, has been devised by Charles R. Underhill, of New York City. It prints the letters or characters on a strip of tape similar to the stock ticker, but it is not necessary to use a specially constructed sending machine. A Morse key in the hands of a Morse operator does the sending, and the receiving instrument transcribes the dots and dashes into letters or figures.

It is necessary to use a synchronizing device to keep the sending and the receiving apparatus in unison. There are no vibrating rods or other sensitive parts, and the mechanism is comparatively simple. The instrument operates on the principle of analysis and synthesis, the analytical portion measuring the length of the impulses, as well as their respective positions in the character being sent over the line. The synthetic portion turns the type wheel to the position corresponding to the value of the combination of impulses representing each character. Should one character be missent, it will have no influence over the following character, as the mechanism starts from zero for each character.

This instrument can be used for wireless telegraphy and thus simplifies the receiving of messages. On a land line the usual Morse instruments are connected up and operate as usual, the new receiver not interfering with the Morse sounder. The instrument can be attached instantly to any Morse wire.

Rushing Flour to Japan.

EXPORTS from the United States to Japan have risen mountain high during the last month, owing to the announcement that a new war tariff will go into effect on July 1st. Ships sailing from Pacific Coast ports are all heavy laden with all kinds of merchandise and the railroads are pouring freight into the Western seaports. The wharves at San Francisco, Seattle, Portland and Tacoma are teeming with stevedores and the work of loading ships goes on night and day.

While the bulk of the exports is flour, yet great quantities of machinery, tools and railroad supplies are among the cargoes being hurried forward. It is estimated that fully 2,000,000 barrels of flour will be shipped before the new Japanese import tariff becomes effective. America practically controls the Japanese market for breadstuffs, and through this influence the machinery export trade to Japan is fast growing.

The Japanese and American traders have established a bond of confidence that in time will extend to all other export lines.

Revival in Shipping Business.

THE world's deep-sea commerce, which has been declining for some years, has at last taken an upward turn. Shipbuilders in the United States and abroad report indications of a sharp revival in the shipping business. Some yards report that they have been compelled to refuse orders for ships to be delivered this year. One of the signs of the times is the demand for cheaper ships.

In discussing this return of prosperity in the shipping world, the Portland (Ore.) *Oregonian* says:

"This pronounced activity, coming before the rates have regained more than a small portion of the decline of the past four years, indicates great faith in the future of the business, and also shows that the foreigners, who handle the bulk of the world's deep-sea commerce, do not purpose to be caught napping when the pendulum gains full headway on the upward swing.

"When the last previous boom in ocean freights began gathering headway in 1897, it found the shipowners rather unprepared for the big traffic offered them. The profits returned by the vessels which were in commission were so great that yards all over Europe were swamped with orders, most of which were placed at much higher figures than had prevailed for many years.

"High-priced ships were all right so long as there were high-priced freights to keep them busy, but when the pendulum began on the downward swing in 1900-1901, it was the owners of high-priced ships who suffered the most.

"These cheap ships will enable owners to take advantage of the returning prosperity in shipping, and they will not be unprepared to handle the business, as was the case in the last era of high freights. This policy of slightly discounting the future has been of material benefit to the foreigners in extending and maintaining their prestige on the ocean.

"American subsidy-seekers pursue a different policy. When freights are low they demand a subsidy in order to make the business profitable, and when freights are high they, of course, have an insufficient number of ships to make a good showing in comparison with the foreigners. The latter are satisfied with moderate returns on the investments, and through good times and bad times keep their ships moving on a business basis, unaided or unhampered by subsidies. The business does not always pay, but it satisfies the foreigner, and some day when investments on shore prove less remunerative, America will again turn to the sea, where she flourished before highly profitable land enterprises were developed."

Artificially Aging Wood.

A NEW and quick process for the seasoning of wood has been invented which will give an artificial age to wood in a very short time. This will be of the greatest benefit to builders and manufacturers who often have had to use poorly seasoned wood and lost much money on account of heavy repair bills or the return of cracked and imperfect goods.

Often it requires six years to properly season wood, and, of course, the loss of interest on the money invested has mounted up to large figures. With this new process, invented by an Englishman named Powell, wood may be aged artificially in a few weeks. The inventor replaces the sap of trees by beet sugar or saccharine, which is said to act as a preservative of the wood by driving the natural humidity from the fibers. The following is the method employed: Newly felled wood is laid on a wagonette, which is rolled into a huge cylinder, the interior of which is provided with pipes. Either hot or cold water, as occasion requires, may be introduced into these pipes. The wood having been placed in the cylinder, the latter is supplied with sugar or saccharine. Hot water is then forced through the pipes. The contact of the heat boils the sugar, which penetrates the pores of the wood. The cooling process is accomplished by a current of cold water forced through the pipes. The cylinder is emptied of the sugar or saccharine, and the wagonette, with its burden of wood, is rolled into a special room, where it is dried by currents of hot air. After being cooled again, the wood, properly seasoned by the sugar, is ready for use. It is said not to spring or gather dampness, and to be proof against destruction by insects.

This process, if proved successful, will be of the greatest advantage in tropical countries, where the insect pest has ruined millions of dollars' worth of lumber and timber and even destroyed the houses after their erection by eating away the wood.

New American Railway Coaches.

OPEN railway passenger cars, so popular on some tropic railways, are to be placed in service as tourist observation cars by the Denver and Rio Grande Railroad, in the State of Colorado. They are to be attached during the summer months to the daylight trains running through the cañons of the Rocky Mountains.

These cars will have a seating capacity of seventy-two persons, low sides, but no tops, thus being entirely open and giving a free and unobstructed view of the scenery.

The first all-steel passenger coaches to be used in the United States were placed in operation on the New York City (street) railway only last month. These cars are of steel outside construction, trimmed inside with wood electrically treated and said to be fireproof.

Boot and Shoe Credit Bureau.—The National Boot and Shoe Association of the United States has formed a credit bureau that will facilitate the extension of credits to both domestic and export buyers.

Quality and Price

are the first considerations when making a purchase.

Both these essentials are contained in the

Schroeder

1904 MODEL

Roller Gearing, Rotary Washer.

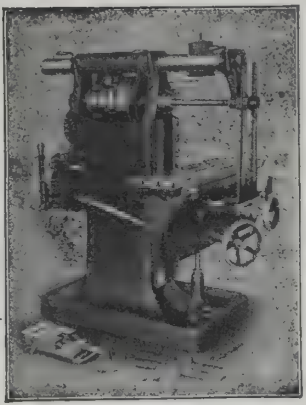
Lightest to Operate. Best Construction.

Furnished with detachable legs for export. We also manufacture the "**B.B.**" and "**Brammer" Rotaries**, also several styles of Lever Washers—round or square. Write us for further particulars

BENBOW-BRAMMER MFG. CO.,

The Pioneer Washing Machine Manufacturers,
St. Louis, Mo., U. S. A.

BECKER-BRAINARD MILLING MACHINES,



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This complete range enables us to meet every requirement with regular stock machines.

Write for complete catalogue, advising particular class of milling work you are interested in.

Becker-Brainard Milling Machine Co.,
HYDE PARK, MASSACHUSETTS, U. S. A.

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SCHUCHARDT & SCHUTTE, Berlin, Vienna, Stockholm, St. Petersburg. 260

The Blickensderfer Typewriter

Stands alone as the only high-grade typewriter sold at a low price. If you are interested in knowing why, we can tell you.

The Blickensderfer Mfg. Co.
644 Atlantic Street,
Stamford, Conn., U. S. A.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the

White Lily Washer.

WHITE LILY WASHER.
WASHES LILY WHITE.

The White Lily (Rotary) Washer is made from **Louisiana** and **Mississippi Red Cypress,** which is less susceptible to expansion and contraction caused by hot or cold water **than any other timber known. Our hinges are put on with bolts instead of screws,** and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2⅜ turns of the fly-wheel to one turn and return of the dasher. **The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.**

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** ($30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**
Weight, 600 lbs. Measurements; 18x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

MANUFACTURERS OF

ALL KINDS OF SUPPLIES

FOR

OIL AND GAS WELLS.

Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
Drilling and Fishing Tools,
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We furnish Complete Outfits ready for drilling.
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Experimental Farming.

As a counteractive to the influx toward the large cities of the United States, a society or guild has been organized in New York to induce city residents to farm small tracts of land near the great cities. A tract has there been secured for this purpose and made ready for settlement.

The idea grew out of the work of a Chinaman who farmed a small tract of land one year at a profit of $1,500. The Rev. George J. Newton, of Riverhead, Long Island, learned of this feat and started an investigation. He found that, when properly managed, an acre of land planted with vegetables, would yield about $300 on soil which ordinarily yielded only $25 an acre per annum. He learned that an acre would produce from $50, in the case of spinach, to $600, in the case of asparagus; if berries were cultivated, from $200 to $700, and if peaches, pears or apples were raised, from $100 to $500.

Long Island was selected as the ground for the new settlement. Its situation, at the threshold of New York, promises a constant market for the products. The rich, black soil in the neighborhood of Port Jefferson is deep enough to permit of the raising of several crops a year, on the intensive system, and thin enough to be easily worked. Furthermore, the temperature, tempered by the waters that surround the island, is more equable than that of inland places.

The intensive method is revolutionizing farming as it was. It is simply an intelligent method of getting the limit of productiveness from the land. Radishes, lettuce and cabbages grow at the same time in the area formerly used for one crop. Early potatoes and early cauliflower are followed by Brussels sprouts and celery, two crops being as easily grown as one. The best beans are grown amid fruit trees—another instance where the land is doubly utilized.

If the new movement is successful its backers believe that it cannot be without significance, not only in respect to the food supplies of the great cities, but also in stimulating a much-needed counter tide to the great flood of humanity that is constantly pouring from the country sections into the crowded centers.

Storing Artificial Ice.

The question whether artificial ice can be stored for future consumption with profit has been under discussion in the United States for some time, being answered both affirmatively and negatively by different writers. It is agreed, however, that artificial ice can be stored and taken out of the icehouse in as good condition as when it left the machine dump. The main factor is to have an icehouse properly built to conserve the supply of ice needed to keep it cool.

A properly constructed storage house should have a solid foundation with cement floors. Either dead air spaces or cork or felt boarding should be used in the sides and ceilings. Particular care should be taken to see that the cold air does not escape. Good ventilators should be put in to regulate and refreshen the air. The ice should be placed on 2 by 4 timbers so as to allow the air to circulate between it and the floor and similar timbers should be placed between each layer of ice for the same purpose. The temperature should be kept at about 26 degrees. The house should be thoroughly piped, using about 1 foot of pipe for each 7 feet of space to be kept cool. The brine should be kept circulating through the pipes.

The cost of keeping the ice is figured at about one cent per ton per day. At this rate it is hardly a commercial success, but when it is taken into consideration that an ice machine may break down at any time it pays to be on the safe side. And, again, if the demand for ice is such that an additional machine is required to supply the trade only part of the year it would pay to store the ice rather than to invest in a new set of machinery and then allow it to remain idle a portion of the time.

Fattening Chickens by Machinery.

Fattening poultry by machinery may seem amusing to some, but it is in daily operation at the Chicago packing houses. The incubator is used on the farms to hatch the eggs and a patent feeder is used at the packing houses to feed the chickens and fatten them for the market.

It usually takes two weeks to fatten a chicken, and it is claimed that poultry thus forced to eat make sweeter and tenderer meat than those fattened on the farm. While the fowls are being fed by machinery they are allowed no exercise and no other food than that given them by the machine. One man can feed 300 chickens twice a day.

The poultry to be fed is closely confined in specially constructed coops. Each station consists of a large, well-lighted and ventilated shed. Double rows of coops five tiers high are provided. The chickens roost on wire perches and are compelled to eat the food placed before them in troughs. The feed consists of white cornmeal, oatmeal and milk.

At the end of fourteen days the birds are killed, dry-picked, dressed and placed in coolers. When thoroughly chilled, they are classified as broilers, fryers or roasters, neatly packed in boxes and shipped to market.

Baggage in Bond.—In the future foreign passengers passing through the United States from New York to points beyond the Pacific Coast can have their baggage handled in bond, thus escaping the annoyance of having it examined at New York. The Pennsylvania Railroad has arranged the matter with the United States Government.

Prize to Make Alcohol Undrinkable.

There is a fortune awaiting any inventor or chemist who discovers a formula or a substance which, when added to alcohol, will render it unfit for drinking purposes. The Russian Government offers a prize of $25,750 to the fortunate discoverer.

The substance used must not alter the properties of alcohol that make it useful in the manufactures and the arts; it must not produce a caustic compound or form a residue which would injure a wick or burner. Moreover, it must not be poisonous, but it must render alcohol totally unfit for use as a beverage. At the same time it should not create an unpleasant smell. It should also be so powerful that but a small quantity would be required to do the work, must be cheap so as not to raise the price of alcohol to an appreciable extent, and its character must be such that its presence cannot be easily detected. Above all, it must be of such a nature as to be so difficult to separate from the alcohol as to render it impossible for any one to do it advantageously.

The competition remains open until July 1, 1905, and is open to the citizens of any nation. It is under the control of the Russian Ministry of Finance.

There is no doubt but that such a discovery would be gladly welcomed. If it were not for the tax on alcohol it could be used cheaply as a fuel; it would be a good substitute for naphtha and gasoline and would soon be used in their stead in automobiles and other forms of locomotion.

In the arts and manufactures there is a crying demand for a cheap, combustible fluid. As alcohol is now made from fermented sawdust and, less the internal revenue tax, could be profitably sold at 12 cents a gallon, it will be seen that the person who renders it unfit for a beverage will become a world benefactor.

Price of American Beef.

The price of American beef in London has been the subject of much comment in the American newspapers, who insist that the English are getting their beef cheaper than Americans. The *National Provisioner*, in discussing this subject, says:

"The lay press in America charge the packers with selling beef too high and with amassing millions out of it. The English tradesmen charge the same packers with selling beef too low for the purpose of dominating and controlling the English meat market. Contemporaneous quotations of the two markets show that they are on a parity, after adding the usual costs of transportation, etc.

"As a matter of fact London pays relatively more for meat than New York does. This, too, in spite of the statement of a Smithfield (Eng.) concern that 'American beef sent to England is all surplus produce, and is expected to keep up the price in the States.' That would mean that, even at the prices it brings over there, the American product undersells the British kill. Even South American shippers complain of the narrow margin forced upon Argentine stuff. If this be true, it is a significant warning to those who would attempt the importation of South American beef to the United States.

"The whole truth is that the big American packers are cutting into their own profits so as to give the greatest leeway to our meat products and thereby place them on the lowest competitive trading basis at home and abroad. The other beef man may dislike the method, but the general public is thus enabled to eat at less cost, and should be accordingly thankful. Price and grade make the market. American stuff leads in both."

Popularity of American Goods.

The popularity of American manufactured goods abroad is evidenced by the increasing demand on the part of foreign consumers. This increase, which heretofore has been gradual, is now going forward by leaps and bounds, which proves the discriminating good judgment of foreign buyers.

The volume of iron and steel manufactured goods exported during the first eight months of the fiscal year has broken all previous records. The total is $85,546,682. The highest previous record for a corresponding period was in 1901.

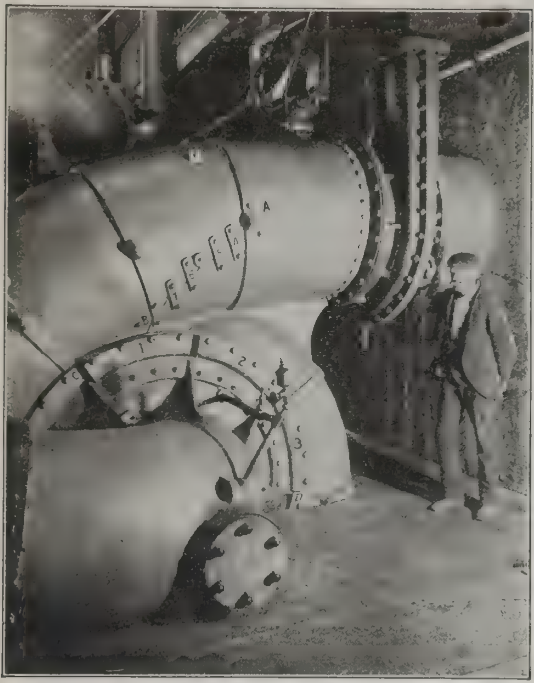
The relation of imports and exports of iron and steel manufactured goods is undergoing a remarkable change. In 1885 the exports were but $11,541,505, while the imports totaled $23,007,651. Now conditions have so shifted that the balance of trade in that line of goods is $71,000,000. The imports during the past eight months have been only $14,343,904.

This shows that despite the fact that many American factories are being built abroad so as to utilize cheaper labor and lesser transportation charges, the foreign buyer prefers American-made goods and his orders are increasing to an appreciable extent.

American machinery is most popular among foreign buyers. This one item alone has increased from $5,487,640, in eight months of 1885, to $39,066,052 in a like period of the present fiscal year. More than $14,000,000 worth of pig iron was exported during the same period.

This continued demand is most encouraging to the American exporter and profitable to the foreign buyer. American skilled labor, with modern machinery, is producing manufactured goods which suit foreign needs, and so long as this continues just so long will orders flow from other lands.

French Line to Handle Freight.—The French line between New York and Havre has increased its fleet by four large cargo-carrying steamships, and has secured a pier on the New Jersey side of the North River to accommodate its increased traffic in freight and immigrants.



Pump repaired with Smooth-On Iron Cement No. 1 five years ago and still in use.

Write for illustrated book showing how repairs are made with Smooth-On, and telling about the different Smooth-On products, the combination of Smooth-On with rubber, etc.; it is free.

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IRON CEMENT No. 1

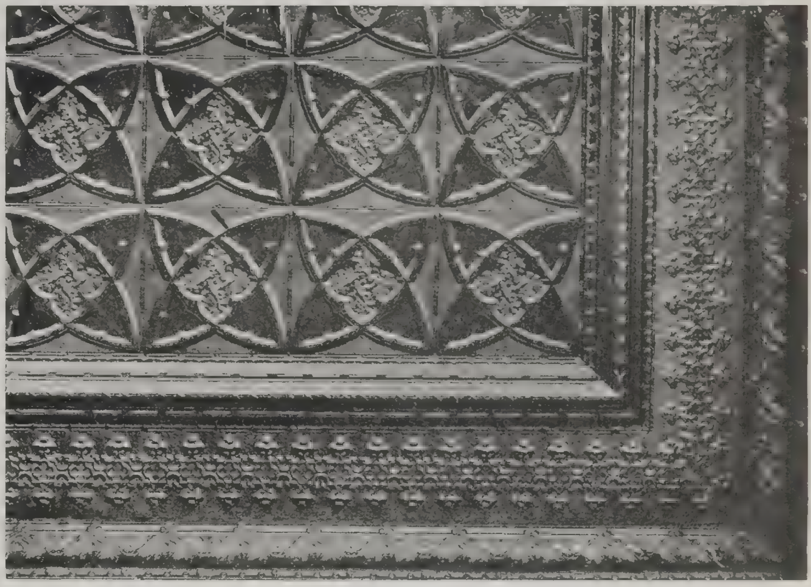
is unequaled for making flanged joints and instead of red lead for screw-thread connections on large steam and water pipes, boiler patching, stopping leaks of Steam, Water, Fire or Oil, because it becomes metallic iron that has the same expansion and contraction as iron, thus keeping the joints tight at all temperatures, and the joints can easily be taken apart. Engineers and Foundry men also use it where a smooth surface and metal-like hardness are desired. Sold in 5, 10 and 25 pound tins.

SMOOTH-ON MFG. CO.,
JERSEY CITY, N. J., U. S. A.

EMBOSSED METAL CEILINGS,

Side Walls and Center Pieces.

LARGE AND COMPLETE LINE
OF CLASSIFIED DESIGNS.



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SPECIAL PRICES FOR EXPORT.

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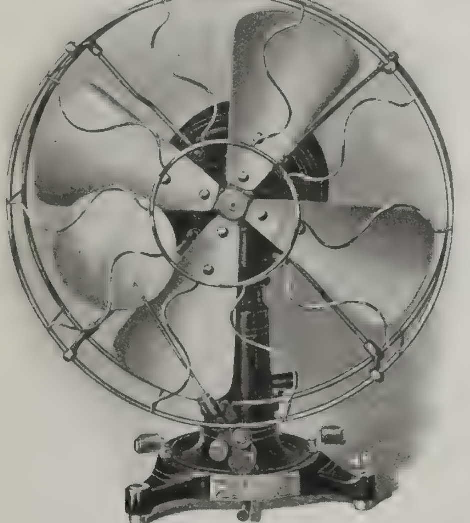


"The Standard" Oscillating Fan

—A type of Desk Fan which turns slowly from side to side while running, and thus distributes its breeze through whatever angle for which it may be adjusted.

The above is only one of ten models of Desk, Bracket and Ceiling Fans which we manufacture for all direct-current circuits.

Our Fans are used and well known in all parts of the world, and we have had unparalleled success in meeting the demands and requirements of the trades as they peculiarly exist in the various countries.

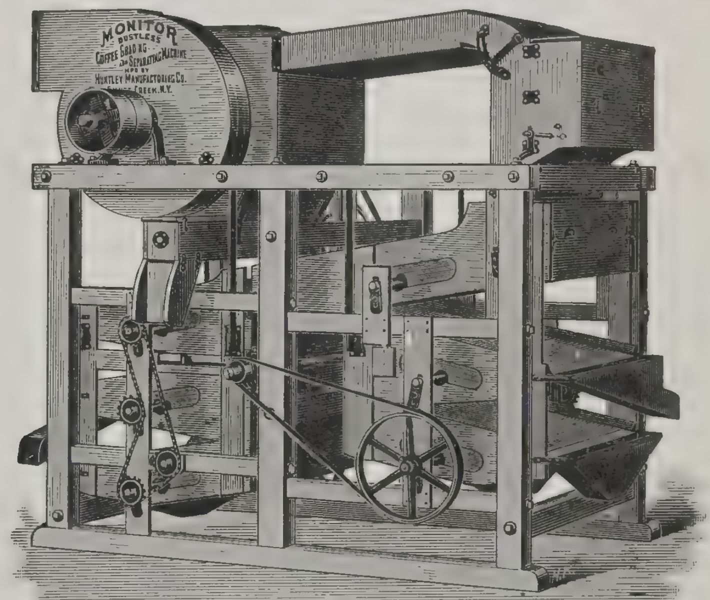
Catalogues, prices, etc., will be sent on request.

We also manufacture a complete line of direct-current Motors and Dynamos, in sizes up to 15 H.-P. or 10 K.W. Ask for literature covering this line.

The Robbins & Myers Co.
SPRINGFIELD, OHIO, U. S. A.

The Perfect Coffee Classifier.

MONITOR COFFEE SEPARATOR AND GRADER.



This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

Monitor Grain, Cereal and Seed Cleaners are unequalled for quantity and superiority of work and low operating expense.

Send to-day for our Illustrated Catalogue of the entire Monitor line, with export prices F. O. B. steamship, New York City.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

Lifting Magnets.

MAMMOTH magnets for the purpose of lifting iron and other metals are being used in many American industrial establishments. The magnets are operated by electricity. A block of steel, which is usually circular, is suspended from a hook attached to a crane. It becomes a magnet the moment the electrical current is turned on.

A flexible twin conductor cable conveys the current to the magnet and a small switch operated by the crane man completes the apparatus. One to twelve amperes are used according to the service the magnet performs.

To lift a load the magnet is lowered upon the material and the current applied. The material adheres to the magnet and it is then hoisted by the crane to its destination, when the current is cut off and the load released at the point desired by the operator, who simply turns the switch. The magnet will support its load so long as the current continues to flow.

Lifting magnets are used to the greatest advantage in handling scrap-iron, tin, sheet-iron, steel or any form of metal material. There are about forty types of magnets, each built for a different kind of work. A magnet, properly built, can be lowered, lift and deposit pig-iron at the rate of one ton in three minutes, and can carry 800 pounds at one lift if necessary.

For breaking up cast-iron these magnets are excellent. They lift the iron ball and drop it by a simple turning of the electric switch. One man operates the crane and magnet, thus doing away with the men usually needed when the old-style hook and chain method of lifting was used. It also allows material to be piled higher, thus economizing space.

American Horses in Demand.

THE introduction of the automobile, which caused many foreign horse-breeders to reduce their supply, has had the effect of turning the orders of English and French horse-dealers to the United States. As a result prices have somewhat advanced, despite the lessened home demand due to the auto machines.

An English horse-dealer, in discussing the scarcity of horses, says: "Of late we have had to go to America, but now it has become no easy thing to buy horses there, as the Americans are being forced to pay almost as much for their horses as we used to pay for them when shipped across here." Japan has also been buying freely of late, and it will be recalled that England bought thousands of horses and mules during the South African war. But still an abundance of horses is to be had in the United States and the foreign buyer can always expect to get his orders filled at reasonable prices.

The manufacture of automobiles has in no way affected the business of horse-breeding. In fact, the business is growing and the foreign demand is further stimulating it. While prices may have slightly advanced, owing to the heavy demands from abroad, the supply is adequate and the foreign buyer will no doubt be able to secure as large a supply at as reasonable a price as the times demand.

Germany Abrogates Reciprocal Tariff with the United States.

THE German Government has notified the Government of the United States that the tariff agreement between the two nations now existing will end on March 1, 1906, thus excluding United States exporters from the privileges of the new reciprocity treaties recently concluded with Russia, Italy, Belgium, Switzerland, Austria-Hungary, Servia and Roumania. The Imperial Government, however, holds itself ready to negotiate a reciprocity treaty with the United States.

Should the United States conclude not to enter into a new reciprocity treaty it means a tariff war between the two nations that must prove disastrous to the manufacturers of one of the countries at least. Should Germany apply its maximum tariff, it would exclude a great volume of trade; this, of course, means retaliation by the American Government, and as Germany has a large trade with the United States she also would suffer greatly.

The motive of the German Government is undoubtedly to enlarge the list of goods now admitted to the United States under a reduced reciprocal tariff.

A World-Wide Industrial Awakening.

REPORTS of orders received from abroad by American manufacturers and exporters indicate that the whole world is awakening, and that a new world-wide period of industrial activity is beginning. The war in the Far East is the only drawback to this great industrial movement, yet that destructive force is contributing to the prosperity of other nations.

The whole civilized world is sending in orders for those articles of commerce which go to make life more comfortable. The shipyards are busy, locomotive works are rushed and car-builders are working overtime. Machinery builders of all kinds report increasing demands for labor-saving machines. New ship lines are being established, and railroads, both steam and electric, are being extended throughout the entire world.

The United States is in the van in this new condition of affairs and foreign buyers are turning their eyes toward America whenever large demands must be met. This nation will meet the emergency, and the foreign importer may expect to have his orders properly and promptly handled.

—Japan has ordered a complete steel plant for its arsenal at Kuri from an American firm. The contract calls for an expenditure of $1,250,000.

Korean Railroad Building.

THE Korean railroads now in course of construction are ordering largely from American manufacturers. The material and rolling stock of all these roads will be manufactured chiefly in the United States. It is stated by an exchange that the first railway in Korea, that between Seoul and Chemulpo, was built in 1899 by an American concessionaire of American material and equipped with American rolling stock. This road was sold just before completion to a Japanese company, and has proved a commercial success. It has now been taken over by the Seoul-Fusan Railway Company (Japanese).

This company expects, within the following month, to complete its new line, begun in 1901, from Seoul to the southeastern port of Fusan, a distance of some 268 miles. This will establish quick communication between the capital city of Korea and Japan by a connecting ocean ferry from Fusan to Moji, Japan.

This railway, like other Japanese lines in Korea, is of standard American gauge (4 feet 8½ inches), and is to be equipped with American locomotives, of which some twenty of them have been already delivered, five of them 110-ton express locomotives.

It was stated that in 1901 and 1902, when rails were first required for the construction of this line, American manufacturers were so pressed with orders that they could not even supply the home demand. Hence, the first rails imported were of British make, and with them a considerable portion of the line has been laid, but more recently large quantities of American rails have been used, and the bridgework of the line is largely of American manufacture.

The International Railway Congress.

MORE than one thousand delegates, the owners or operating officials of railroads in forty-four countries will attend the International Railway Congress at Washington, D. C., from May 4th to 14th. After the convention the delegates will make a tour of inspection of American railroads.

All the topics to be discussed are technical, pertaining wholly to the building, operating and maintenance of railroads throughout the world under the various conditions obtaining. The papers will be discussed chiefly in French.

The congress is unusual in organization, purposes and manner of conducting its affairs. It was organized in 1885, and has held sessions every five years. Its first session, in Brussels, celebrated the fiftieth anniversary of the opening of the Belgian railways. Milan, Paris, St. Petersburg and London have been meeting places since, Paris having had two sessions.

An extensive exhibit of railway appliances will form one of the features of the congress. This exhibit is located in a park near the White House and admission will be by card only. The main building is 160 by 200 feet, and 21,000 square feet of exhibition space will be occupied by American manufacturers. Its promoters expect to obtain large returns for the exhibitors by reason of the foreign delegates who will inspect the machinery.

English Barristers Honor American Embassador.

MR. RUFUS CHOATE, United States Embassador to the Court of St. James, London, has been granted the most distinguished honor ever conferred upon an American by the English bar in being elected recently a "Master of the Bench of the Middle Temple." This not only admits Mr. Choate to the English bar, but also elects him a member of the governing body of the Middle Temple.

This is the first time in the history of the Temple that an American has been thus honored. It aptly indicates the increasing friendship between the English and American people, who have so much in common. Mr. Choate was unanimously elected, after all standing rules and orders had been suspended, amid the greatest enthusiasm.

It is interesting to recall that five of the signers of the American Declaration of Independence were members of the Temple. From that time until the present, however, no American has ever been elected.

Antwerp, World's Greatest Port.—The Chamber of Commerce of Antwerp unanimously has voted approval of the Government's scheme for a vast extension which will make Antwerp the largest port in the world, the cost of which will be $40,000,000. This action assures the success of the project which will be submitted speedily to Parliament for action.

Insufficiency of the Tin Production.—The total tin production of the world is about 100,000 tons annually. Since the yearly increase in production is only about 3 per cent. and the output is not sufficient to supply the demand, the store on hand is fast being depleted. The United States uses 43 per cent. of the total output.

Selling Alcohol to Germany.—The experiment of shipping alcohol to Germany from the United States has been so successful that a regular export trade in that commodity has sprung into existence. The first shipment of 5,000 barrels sent via Hamburg was quickly disposed of and was followed by other shipments. Austria formerly controlled a large portion of this trade and the Prague daily papers are somewhat alarmed over the new American invasion.

—During the month of March England reports an increase of $7,669,565 in her exportation of cotton goods. The United States supplied nearly all of the raw cotton.

Loud enough for dancing

The new Victor dance records used in connection with the

Victor Talking Machine

take the place of an orchestra. Perfect time and the music is brought out in a loud, clear, beautiful tone.

Write for complete catalogues of machines and records
Liberal discounts to the trade

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THE TYPEWRITER FOR BEAUTIFUL WORK.

NO RIBBON, 85 CHARACTERS,
NO COMPLICATIONS, LIGHT TOUCH,
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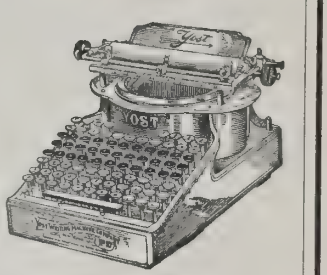

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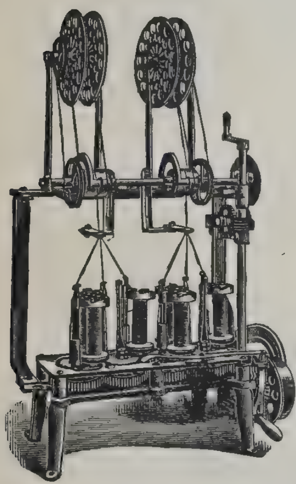

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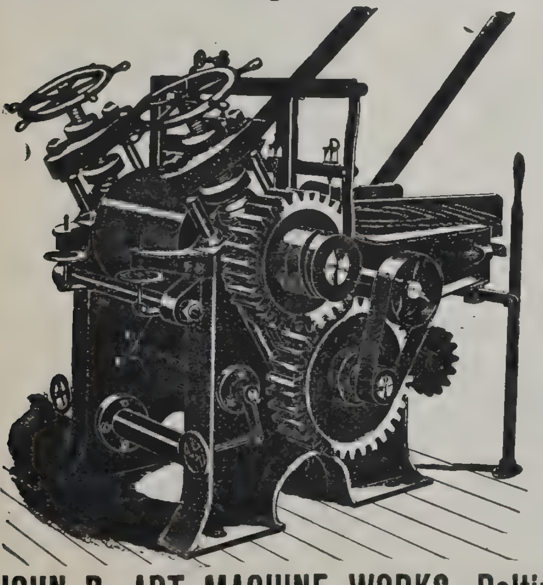

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United States Navy and Merchant Marine.

THE United States needs a navy treble its present size, is the opinion of Rear-Admiral Melville.

The American merchant marine must be built up and expanded to an unlimited extent, declares Secretary of the Treasury Shaw.

In discussing the first proposition, Admiral Melville says:

"Our present navy, which cost more than $200,000,000, is not more than sufficient to protect our home coast. For the proper protection of our foreign possessions it would be necessary to increase the navy threefold."

The Admiral said that a navy twice as large as the present one would be required to protect the Panama Canal if the nation's coast line were to be properly defended.

"The question is," the Admiral went on, "whether the American people are big and broad and liberal enough to support a navy costing $600,000,000. We really do not want the Philippines, for we are not land-grabbers. But the time may come when we—14,000 miles away from our island possessions—may find it difficult to keep them. It would be an easy thing to withdraw gracefully now. In the case of the Philippines, if another nation came along and told us to get out, our Anglo-Saxon blood would not allow us to do so.

"The army and the navy are willing and ready to protect the nation. All that is needed is for Congress to give us ships and money."

Secretary Shaw is just as emphatic in advocating the rehabilitation of the merchant marine, saying he does not care how it is attained, whether by subsidy or otherwise, so long as American ships are built. He says:

"We justly congratulate ourselves that the balance of trade in our favor is several fold larger than that of any other country. But these conditions will not always last. For many years we have exported about 10 per cent. of the gross products of our farms. Our population will very soon increase relatively faster than new lands can be brought under cultivation or the productiveness of our soil increased. Under favorable conditions this will work very greatly to the advantage of the agricultural States, but this ever-increasing population must find employment if they are to eat bread.

"They must find employment in factories if they are to be beneficial to those who do occupy farms. And that they may find employment in factories, foreign markets for factory products must be found. It will require salesmen, foreign agents, foreign warehouses and a merchant marine to dispose of our surplus manufactures. If we get our legitimate share of the trade of South America, Oceanica, Asia and South Africa, we will have to go after it and go in American ships."

New American National Banks.

IN the last five years 2,411 new national banks have been organized in the United States. This was made possible by the amendment to the banking law, March 14, 1900, which reduced the minimum capital stock from $50,000 to $25,000.

These 2,411 new banks have a combined capital of $139,895,300. Five-sixths of these new banks are located in the Southern, Western and Pacific States, just where they were needed.

Oklahoma and Indian Territory, the coming forty-sixth State in our Union, organized 203 of the new banks, with $6,285,000 capital. In the Southern list Texas shows up nobly; 270 new banks with $11,980,000 capital. Pennsylvania leads the Eastern list with 259 banks, of $20,922,000 aggregate capital. Ohio heads the procession for the Middle West as to new banking capital, with $10,395,000 in 132 banks, while Minnesota leads in the number of new banks, 160, with $5,431,000 capital.

Here is the distribution by groups of States:

	Banks.	Capital.
Middle Western States	725	$42,366,000
Southern States	615	32,266,500
Western States	516	16,921,000
Pacific States	116	9,147,800
Island possessions	3	625,000
Total, where most wanted	1,975	$101,326,300
Eastern States	407	33,584,000
New England States	29	4,985,000
Grand total	2,411	$139,895,300

Ships, Chicago to Europe, Direct.

THE ten whaleback steamships which have been used in the iron ore trade in the Great Lakes have been purchased by a Chicago syndicate and will be used to carry grain direct from Chicago to European ports. The vessels are now in dry dock at Detroit being remodeled for ocean voyages. If this scheme is successful a new era in the grain export trade will open and transportation charges will be greatly reduced, thus allowing American grain to be laid down in Europe at much lower prices then heretofore, as the rail shipment rates in the United States will be avoided. The all-water rates will be much less. A big demand for grain is expected this year, especially from Russia and Spain.

Growth of Locomotive Building.

THE largest individual order for locomotives ever placed by a railroad company has been given to the American Locomotive Works by the Baltimore and Ohio Railway Company. The total cost of filling this order will be $3,000,000 and the locomotive works will be kept busy for about a year on this order.

The American Locomotive Company recently purchased the Rogers Locomotive Works at Paterson, N. J., and now controls the following plants: The Brooks Locomotive Works, Dunkirk, N. Y.; the Pittsburg Locomotive and Car Works, Pittsburg, Pa.; the Dickson Manufacturing Company, Scranton, Pa.; the Rhode Island Locomotive Works, Providence, R. I., and the Schenectady Locomotive Works and the Rogers Locomotive Works. The company also owns all the stock of the Richmond Locomotive and Machine Works, Richmond, Va.; the Manchester Locomotive Works, Manchester, N. H.; the American Locomotive Company of New Jersey, and the Cooke Locomotive and Machine Company, Paterson, N. J. In March, 1904, the company acquired control of the Locomotive and Machine Company, Montreal, a Canadian corporation.

During the last fiscal year 491 American locomotives, valued at $4,525,746, were exported, an increase of more than 100 per cent. over the preceding year. British North America, Mexico and Japan, in the order named, were the three best foreign customers. The first took 156, as against 102 last year, and 112 in 1902; the second took 137, as against 67 last year, and 103 in 1902; the third took, 90, as against 27 last year, and 32 in the corresponding period of 1901. Twelve locomotives were shipped to China last year, an increase of five over 1903, and ten over 1902. Cuba more than doubled its orders, taking 28, as compared with 11 the year before, and 11 in 1902.

Paper Made from Corn Stalks.

PAPER made from corn stalks at one-third the cost of making it from wood fiber and rags is the latest advancement in paper-making. A company has been organized to utilize the waste products of the corn fields and soon the new writing, wrapping and printing material will be on the market. Samples of the new paper show it to be the equal of the fine goods made from linen. One sample resembles Japanese vellum so closely that only an expert can detect the difference. In quality it is just as good. In producing this fine paper common, ordinary corn stalks, of which 53,000,000 tons rot yearly in the corn fields of the Western States, was used. The cost of manufacturing a ton of this paper ranges from $22 to $25. The manufacturing cost of a ton of rags or pulp runs from $60 to $75. Prof. W. R. Patterson, of the Department of Economics and Statistics of the State University of Iowa, recently made a test and an analysis of the new paper and pronounces it equal to the paper made from rag or wood pulp.

The machinery used in making this paper was built at an outlay of $100,000, but duplicates can be built much cheaper. The operation is simple. An improved threshing-machine used on the farm separates the stalk from the leaves, husks the ears and delivers the stalks bound in bundles ready for shipment. When received at the paper mill the stalks are depithed. The pith is then rolled into a fine paper. The hard outer covering is macerated and digested and used to make coarse wrapping paper and box board. The company owning the patents on the machinery are negotiating for a large paper mill at Kankakee, Ill., where the tests have been made, and intend to go into the paper-making business on a large scale so soon as the machinery can be built.

The company will utilize every vestige of the corn stalk, as certain portions are used in the manufacture of cellulose, gun-cotton, powder, varnish, lubricants, papier-mâché, etc. In fact, every shred of the stalk is to be put to some use in this mill. This new method of paper-making means millions of dollars to farmers who heretofore have burned the corn stalks or used them for fertilizers. It also means that the cost of paper will come tumbling downward, making books cheaper, newspapers cheaper to produce, and may even cause disaster to the paper trust, which now controls the output of the United States and Canada.

Paper Milk Bottles.

MILK bottles manufactured from heavy spruce wood fiber paper is the latest experimental venture in America to help solve the problem of a sanitary milk supply. It is expected that these bottles can be made so cheaply that they may be thrown away after one use. In this way the spread of disease through germs may be minimized. The bottles are made in the shape of a cone, dipped in paraffine, and baked. The bottles thus are sterilized. The milk does not come in contact with the paper. Experimenting is still in progress, and if machinery is designed to make these bottles the public may soon expect to see them in daily use.

A Novel Scheme to Increase Wool Output.

A NOVEL scheme to increase the output of wool in the United States has been adopted by a Massachusetts stock company. The plan is to lease to farmers and others the number of head of sheep they can feed and to establish a market for the wool produced. In this way, it is figured, great numbers of sheep will be cared for by farmers who at present are unable to invest money in the purchase of stock. The head office of the concern will be at Greenwich, Mass.

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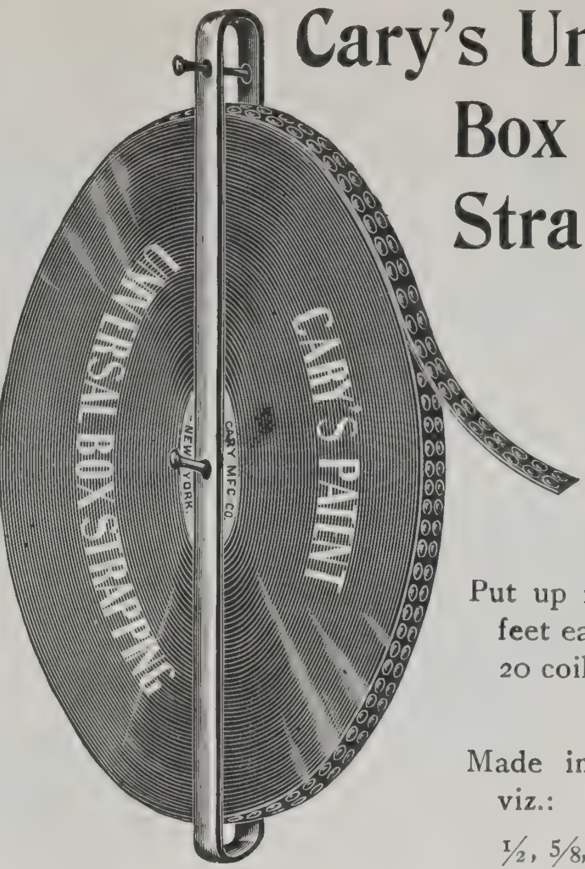

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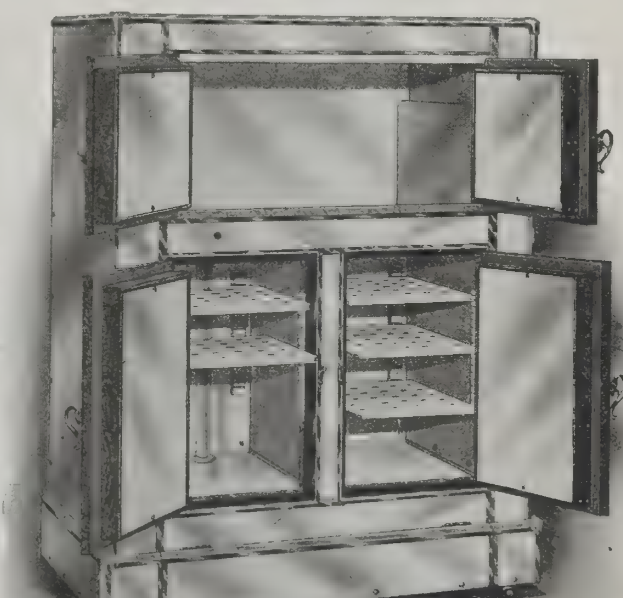

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An Age of War.

THIS is an age of war. Not only are the Japanese and Russians seeking each other's blood, but all over the world man is hunting man, gun in hand. In the Island of Sumatra, unsung by war correspondents, the industrious Dutch are nearing the end of the seventy-fifth year of their war upon the elusive Achinese. In Central Arabia 100,000 Bedouins are in revolt against Turkey, and only the other day they issued a manifesto asking the Powers to recognize their rights as belligerents. The Argentine Republic has just put down another rebellion, and in Colombia, San Domingo and Venezuela the members of rival parties are going about armed.

In the western part of Mexico there is war with the Yaqui Indians, and in Morocco every able-bodied Benider Kabyle beyond a radius of ten miles from the capital takes a shot at the Sultan's army whenever he gets a chance. In German East Africa a battle is fought with the natives every month or so, and in the Philippines an occasional ladrone gathers his kindred about him and massacres a squad of constabulary.

The province of Kwangsi, in China, has been in open revolt against the Pekin bureaucracy for three years, and not so very long ago 200 captured rebels were beheaded on the water front at Canton in one day. England has but recently bought peace at the cost of powder and shot in Tibet and Upper Nigeria, and the Mad Mullah (or one of his disciples) still bothers the French in Somaliland.

Consider, besides these things, that the head hunters of Borneo and Sarawak are ever busy, that Poland and Finland are breeding revolt, that half of the Latin republics are never at peace for more than a year at a time, and that in Central Africa, year in and year out, there are wars that the civilized world never hears of—bearing these things in mind, it will be observed that universal peace is as meaningless to-day as it was when Alexander's legions roamed the plains.

And then there is another side to this question—the stupendous cost of war and to prevent war.

Thirty years of armed peace in Europe show these figures, in millions of dollars, as the three greatest war budgets:

Year.	Great Britain.	Germany.	France.
1873	120.0	83.4	111.7
1883	135.0	101.7	160.0
1893	166.3	166.7	173.9
1903	344.7	217.5	200.2

The whole of Great Britain's vast debt, and 80 per cent. of France's and Germany's, are due to war costs.

The annual expenditure of these three nations on the interest on war debt alone is over $300,000,000.

Great Britain is now spending $344,000,000 for the support of military armaments, while Germany expends $217,000,000 and France $200,000,000, and the outlay of the United States for soldiers and fleets has risen to $195,000,000, and is more likely to increase than decrease for some time to come.

United States Trade with Mexico.

THE United States to-day controls more than half of Mexico's import trade. Out of the $41,449,597.96 worth of imports for the last six months of the fiscal year, the United States proportion was $22,777,654, a decided increase over former reports.

According to the official report by the national treasury of Mexico, the imports into that country during the first half of the current fiscal year 1904-1905, show an increase of $4,272,634.87 gold value and a decrease in exports of $10,718,328.32, as compared with the corresponding period of the last fiscal year. The imports were divided as follows:

Animal substances	$3,329,334.66
Vegetable substances	6,653,390.30
Mineral substances	12,087,030.04
Dry goods	5,749,823.09
Chemical and pharmaceutical products	1,510,031.07
Beverages	1,534,804.18
Paper and its applications	1,281,770.66
Machinery and apparatus	5,709,118.31
Vehicles	1,057,095.18
Arms and explosives	1,308,286.59
Miscellaneous	1,228,913.85
Total six months' imports	$41,449,597.96

The proportions of these importations, supplied by the several principal countries, were as follows:

United States	$22,777,654
Great Britain	4,992,979
Germany	5,271,875
France	4,073,639
Spain	1,799,055
Belgium	758,949
Italy	325,280
Austria-Hungary	287,875
Switzerland	227,475
Holland	122,804
Canada	9,572

Exports to the Orient.

EXPORTS to China from the United States in the first eight months of the present fiscal year indicate that the United States total exports to China during the twelve months ending June 30th next will reach the unprecedented figure of $40,000,000, while to the Orient, as a whole, the total will probably approximate $150,000,000 in value. These conclusions are based upon figures just compiled by the Department of Commerce and Labor through its Bureau of Statistics, which show that American exports to Asia and Oceanica in the eight months ended with February, 1905, amounted to $92,523,412—practically equal to the total shown by the full twelve months of the fiscal year 1904, and exceeding the total for the eight months of any preceding fiscal year.

Prior to the present fiscal year exports to Asia and Oceanica from the United States had never reached so much as $100,000,000, save in the exceptional year 1900, when the total was $108,305,082, as compared with $61,927,678 in 1897, $78,235,176 in 1899, $98,202,118 in 1902, and $93,002,028 in 1904.

The principal Oriental countries to which this $92,500,000 worth of merchandise was exported are: China, $28,000,000; Japan, $26,000,000; British Australasia, $17,666,000; Hongkong, nearly $8,000,000; British East Indies, $5,000,000, and the Philippines, about $3,500,000.

To China United States exports during the eight months under review show a remarkable gain over previous years, being $28,000,000 in the present fiscal year to date, as against 8.2 millions for the same period of last year, $15,500,000 for the corresponding months of 1902, and 10.2 millions in the same months of 1900. At the present rate of exportation the total sales to China will reach fully $40,000,000 for the full fiscal year, which ends three months hence.

To Japan, which stands second in the purchase of American merchandise by Oriental countries, the exports during the eight months ended with February, 1905, also established a new high record, being $25,930,742, as against $15,643,331 in 1904, $16,334,585 in 1902, and $3,168,869 in 1895, the figures in each case relating to the first eight months of the year.

The great increases noted in the case of China and Japan would seem to justify the expectation that the total exports to the Orient in the fiscal year 1905 will be by far the largest on record, approximating $140,000,000 in value, while if the shipments to Hawaii from the United States be included a total of $150,000,000 would probably be reached. For the eight months alone the exports exceed by over $23,000,000 those for the corresponding period of any preceding fiscal year, being $92,000,000, as against $69,000,000, the figures shown by the eight months' period of the high-record year 1900. If, however, to this $92,523,412 of exports to Asia and Oceanica in the eight months there be added the $7,375,913, the value of shipments to Hawaii from the United States, the total sales to the Orient during the period named would be practically $100,000,000 in value, or at the rate of $150,000,000 per annum.

Electricity Transforming Traffics.

RAILROADS are being equipped with electrical power, not only in the United States, but abroad, so extensively that the transportation to be furnished in the near future in and out of the great centers of population—most notably in the vicinity of New York City—will be practically as convenient as trolley service to-day, writes Bernard Meikeljohn in the May *World's Work*. Trolley lines meanwhile are spreading so widely, and their service is expanding with such variety—in freight and baggage cars, smoking cars, dining cars, and even sleepers—that they are becoming more and more like the railroads. The locomotives now in use may not be doomed to the scrap heap; indeed, engineers declare that the railroads would have to carry twelve times as much freight as they do to make it advisable to discard them. Steam, too, is still far cheaper to use than electrical power on lines remote from water-falls or from cities where suburban traffic is heavy enough to provide a steady stream of passengers. But with heavy third-rail cars in the cities now conveying people by subways and elevated lines to the railroads, with electrical locomotives or motor-equipped cars prepared to rush trains to the suburbs, and with suburban and interurban trolley lines taking up the relay and reaching every hamlet, a system is taking form that will soon permit anybody to go anywhere at almost any time—on electrically driven cars.

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A CONVENIENT machine for testing lubricating oils is one of the latest novelties described by the manufacturing press.

A short shaft working in a bearing appropriately loaded is the essential feature. About half a pint of the oil under examination is poured on to the bearing, and the shaft is set revolving at a definite speed. The time that elapses before the shaft comes to rest is noted; the greater the time the better is the lubricating quality of the oil. After the test the bearing is cleaned by pouring over it a liquid in which the oil is soluble, and then removing the liquid by a blast of air. This method of cleaning is found to be quite effective, and is economical of time. The machine may be driven by an electric motor or other mechanical means or by hand, and there is an arrangement of resistance coils by which the bearing can be heated up to any required temperature. Both the bearing pressure and the speed may be conveniently regulated.

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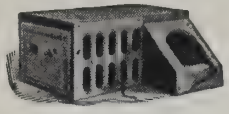
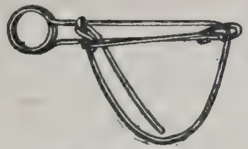


"Catch-'Em-Alive" Mouse Trap. Delusion Pattern.



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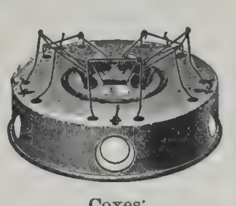

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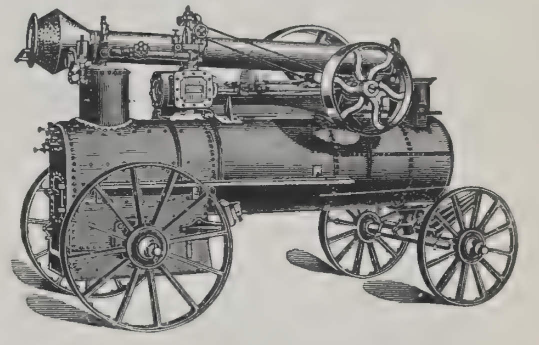

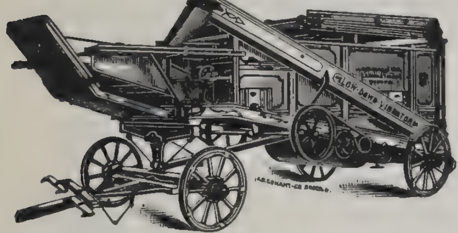

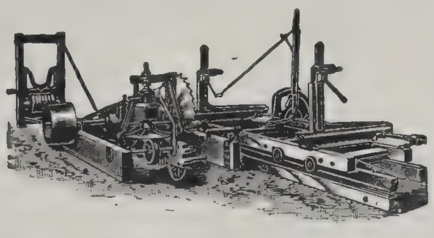

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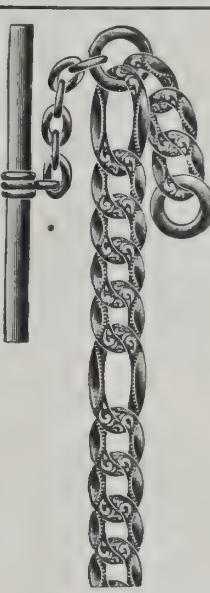


The Largest and Most Complete Line for Export.

MANUFACTURERS OF

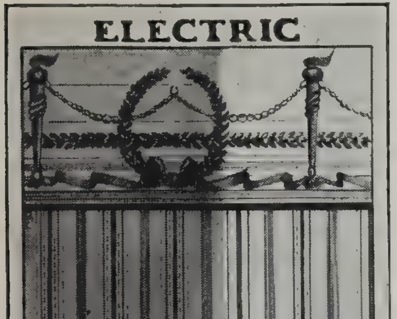
Ladies' and Gentlemen's *Watch Chains* In All Styles *and* Qualities

Satisfaction guaranteed on all our chains. We have just completed the largest catalogue ever issued in these lines. Sent postpaid on request.

RODENBERG-SMITH COMPANY

Factory, Providence, R. I.
9-11-13 Maiden Lane, N. Y., U. S. A.

Orders Executed Through Commission Houses.



Make OLD or SOILED Wall Paper or Carpets LOOK LIKE NEW.

Electric Wall Paper and Fresco Cleaner.

Cleans easily and perfectly. Already prepared for use. Will keep for years. Contains no water, therefore does not mould nor dry out. Any one, even a child, can use it, as it is impossible to streak the walls with it. It is a thorough disinfectant and leaves a room clean and healthy.

Put up in 16-ounce labeled tin cans.

Electric Cleanser.

Cleans Carpets, Rugs, Curtains, Woodwork, etc., and removes dirt and spots from Carpets without taking them from floor.

Put up in 16, 10 and 2 ounce enameled cans and 25-lb. pails; 250-lb. barrels.

Prices and further particulars on application.

The Electric Cleanser Co., Canton, Ohio, U. S. A.

The Springfield Tire and Rubber Co.

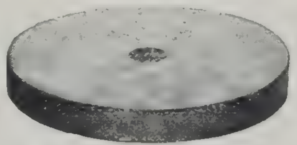
SPRINGFIELD, OHIO, U. S. A.

MANUFACTURERS AND EXPORTERS OF

Springfield Abrasive Polishing WHEELS and Blocks.

WHEELS, 2 to 18 inches in diameter and ¼ to 4 inches thick.

Made in different sizes. Unrivalled for removing rust spots, cleaning and polishing steel and other metals, giving them fine and smooth surface, not scratching or injuring.



Made with Emery or Carborundum. Used dry or with water, but not with oil.

Wheels made in sizes from 2 in. to 18 in. diameter, and from ¼ in. to 4 in. thick.

Blocks of 3 to 12 inches long. Blocks of 1 to 3 inches wide. Blocks of ¼ to 2 inches thick.

Prices and discounts on application. Send for catalogue. Mention this paper.

W. R. EATON COMPANY

Manufacturers and Exporters of HIGH-GRADE CHOCOLATES

In Five-Pound Boxes and Fancy Packages.

Orders Filled Through Commission Houses. Correspondence Solicited.

BOSTON, MASS., U. S. A.

ÆG-AN-IURN

An ethical nerve and blood tonic, used extensively by physicians and hospitals. Endorsed by leading doctors in the United States.

We offer exclusive agency in foreign countries to import agents of integrity who are able to handle AEG-AN-IURN.

The Hygeian Research Laboratory, 190 Michigan Street, Chicago, Ill., U. S. A.

Motor Ice Boats in Commerce.

INVENTED as a pleasure craft, the new motor ice boat which was designed and built by F. M. Underwood, of Toledo, Ohio, bids fair to become of great value in cold countries where transportation is difficult, but where the frozen season is of great duration. Mr. Underwood is commodore of the Toledo Yacht Club, which also sails ice yachts. The success of the motor boat and the automobile started his thoughts, and he evolved the motor ice boat which worked so well that the question of transporting goods on ice-runner trucks by motor is being figured on. Mr. Underwood's motor ice boat is 12 feet long, 40 inches wide at the bow and tapers to a sharp point at the stern. The runners are made of sheet steel. The steering runner is controlled by a tiller and operates the same as a sail boat. A sheet steel bow curved upward protects the operator from broken ice and other loose objects on the ice that may be struck while the boat is speeding. The engine is set crosswise. The steel driving wheel has twelve spokes, is 36 inches in diameter, the surface being 2 inches wide and set with ninety-six sharp-pointed steel spikes 1 inch high. The spikes are set irregularly, thus giving a better grip on the ice.

A new boat is under construction with two drive wheels and will have a 10-horse-power gasoline engine. Power is transmitted by a regular automobile chain, and an automatic spring on the runners will raise them in case the boat should strike weak ice or an open spot, and the boat will thus float across such obstructions without injury to the machinery or operator.

It is figured that powerful boats of this description could be built for freight-carrying service and be used in the place of small steamers when the rivers or lakes are frozen.

Mr. Underwood's boat on trial attained a speed of forty miles an hour.

Spring Motor Wheels.

A SPRING motor wheel, combining the resiliency of the pneumatic tire and the hard wearing quality of the solid tire, has been invented. Vehicle builders who have examined it believe it will prove practical. Considerable ingenuity has been expended upon its construction.

The principle of the invention consists of a number of short, laminated springs arranged tangentially within the wheel, and connected at their extremities by a system of levers with the apices of the star-shaped frame of the wheel and with each other. The center of each spring is also attached to a carriage, which is free to move along a curved groove on the internal periphery of the wheel. To the outer periphery is attached a solid rubber tire. The star-shaped frame already mentioned is rigidly fixed to the center of the wheel.

On starting a car provided with wheels of this character, when the turning movement is given to the center of the wheel, the whole frame, springs and carriages move forward under resistance from the springs until the extremities of the grooves in the periphery are reached by the rollers of the little carriages. When this happens the wheel is rigid, and frame and periphery turn as one. Gradually, however, the tension between the periphery of the wheel and its frame relaxes, and then a steady balance is maintained between them.

Ideal Roofing for Export.

A NEW composition roofing has been put on the foreign market. It is made on a basis of wood and hair felt and treated by a special process, so that it is thoroughly impregnated with an acid and waterproof composition, which renders it impervious to all destructive elements, makes it pliable and elastic and increases its strength.

The treated felt is then covered with a tough outer coating of a texture similar to snakeskin. The result is a material which makes an ideal roofing substance for any climate and for use on roofs of any character. It is also used quite extensively for flooring and for siding purposes. Unlike many other composition roofings it may be painted in colors for decorative purposes. For use in tropical countries it is in many ways superior to iron or metal roofing, as it requires no attention to keep it in repair, is less than one-half the weight of iron, making it cheap and easy of transportation. The cost of applying is exceedingly small and it may be decorated to produce any desired architectural effect. A very common method of applying it is to fasten it with strips of half-round molding and to paint the molding and the roof in colors to conform with the colors of the building.

Will Wear Cotton Clothing.

THE people of the Southern States of the United States have started an agitation in favor of wearing cotton goods clothing again in order to increase the consumption of cotton. Several cotton exchanges have taken up the matter and will endeavor to put the plan into effect.

In years gone by cottonade was very extensively used by the Southern States in the manufacture of trousers for summer wear, and in those days there were no such trousers worn anywhere as were those made by the old hand looms. From the standpoint of comfort, durability and neatness, cottonade trousers are unrivaled, and yet they have completely disappeared from the market. Instead, the people of the South are spending many millions of dollars, buying linen trousers, which are neither so neat nor so generally satisfactory as were the old-time cottonade goods. Many mills would be established for the manufacture of the goods, while thousands of old looms would also be brought back into operation to supply the demand for the cotton goods.

American Competition in Germany.

GEHEIMRAT GELDBERGER, the author of a book on America entitled "The Land of Unlimited Possibilities," contributes to the current number of the *Preussische Jahrbuecher* an essay on "The American Peril." The writer, a recognized authority on economic questions, declares that the apprehensions on this subject which prevail in European countries are needless. It is true, he says, that the industrial development of the United States contains the possibilities of danger. It is a fatal mistake, for instance, to describe American prosperity as a bubble which will burst when the boom is over.

The prosperity of the United States, Geheimrat Geldberger maintains, is based on a solid foundation. Germany, however, is also a powerful industrial and commercial State, and Geheimrat Geldberger cites elaborate statistics to prove that the United States cannot, as is sometimes said, achieve the commercial conquest of Germany, which is well able to compete successfully with American trade.

The real American peril, according to the writer, consists of the circulation of extravagant descriptions of American industry, which are gratuitous advertisements for American competitors, and encourage the belief that American products are superior to European products. Europe should carefully watch American industrial progress, and follow the example of the United States in organizing great industrial combinations. European countries must not imitate American methods slavishly, but should adapt them to local conditions.

Geheimrat Geldberger advocates the establishment of a central depot for German products in New York, which would promote the German export trade to America, and he calls attention to the necessity for a commercial treaty between Germany and America, based on reciprocity.

American Packers in Venezuela.

THE American beef packers are about to engage in the same industry in Venezuela if reports from Chicago be true. An American of prominence in that business is now in Venezuela looking over the beef and cattle situation there. The mission is being clothed with considerable secrecy, but enough has been made public to warrant the statement that the big American packing houses in Venezuela are under contemplation.

This representative, now in Venezuela, in his report says he is of the opinion that, at the present price of hides and the price of cattle on hoofs in Venezuela, it will pay to kill stock for the hides and turn the meat into canned goods and other forms of export articles.

He also says the hides can be tanned there and the products cheaply turned into shoes, belting and other leather goods. He even thinks the Venezuelans would eat the oleo in form of an oil and cream butter mixture.

He thinks it would not pay to import Venezuelan cattle to the United States for slaughter, but that big money can be made by building the packing houses and factories there and utilizing all the by-products, shipping them abroad as finished manufactured goods.

With better transportation facilities there is no doubt but that the meat and by-products in their various manufactured forms would meet with a ready sale in the South and Central American countries. If operated by the Chicago packers, of course, they would have the trade to themselves, with no American competition.

Wool Sold on Sheep's Back.

THE demand, both foreign and domestic, for wool this year is unprecedented. For the second time in the memory of the wool men the season's crop has been almost wholly contracted for before it left the back of the sheep.

Throughout the Western States the wool clip is in full sway; in many parts it has been completed. The crop is large, but inadequate to the demand. The fine wool brought 15 to 16 cents per pound. The medium grades brought good prices. Woolen manufacturers have, however, taken precaution to contract for vast quantities of Australian wool, so the supply of manufactured woolen goods for export will be equal to the demand.

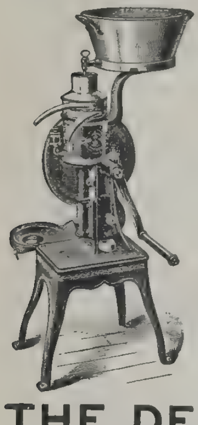
The importation of wool to the United States from Australia during the past year increased 100 per cent. and was valued at more than $6,000,000.

California's Rare Gems.—San Diego County, California, is rapidly becoming famous for its production of beautiful gems. An example is the "Runzite," which was recently discovered, and is not to be found elsewhere. The county also produces pink, green and white beryl and some of the finest tourmalines known. Rare hyacinths are likewise found.

New New York-Scandinavian Line.—A new steamship line to operate between New York and Sweden and Norway is being organized by American and Norwegian capital. Three ships of 10,000 tons each are to be employed. The capital stock will be $2,500,000.

Largest Fan in the World.—The largest exhaust fan in the world has been built by a Chicago company. The fan wheel is 20 feet in diameter and 9 feet wide at the periphery. With the shaft it weighs 7½ tons. It was built for a mechanical draft plant of 5,000 horse-power.

De Laval Cream Separators.



Immediate and complete separation of cream from milk by machinery.

600,000 in Use Throughout the Dairy World.

Highest Award at Every International Exposition for 25 Years.

GRAND PRIZE, ST. LOUIS, 1904.

Machines Simple, Durable and Easily Operated.

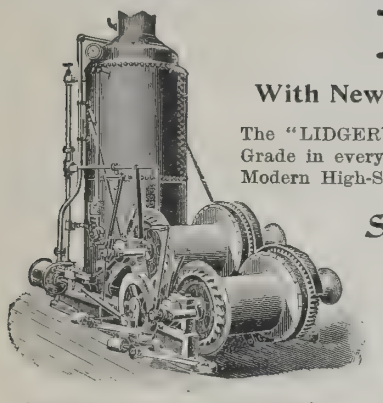
INDISPENSABLE TO SUCCESSFUL DAIRYING.

Hand or Power. Any Capacity.

Address for Catalogue and Any Desired Particulars,

THE DE LAVAL SEPARATOR CO.
General Offices: 74 Cortlandt Street, New York, U.S.A.

Lidgerwood Hoisting Engines



Standard Lidgerwood Hoisting Engine.

With New Improved Patent Friction Drum.

The "LIDGERWOOD" Hoisting Engines are Strictly High Grade in every particular and accepted as the STANDARD Modern High-Speed Hoisting Engines.

Steam and Electric Hoists.

OVER 23,000 IN USE.

FOR PILE DRIVING, BRIDGE AND DOCK BUILDING, MINING, RAILROAD AND CONTRACTORS' USE.

Send for Latest Catalogue.

LIDGERWOOD MFG. CO.
Warerooms: 96 Liberty Street, NEW YORK, U. S. A.

United States Washing Machine Co.

Successors to INTERNATIONAL MFG. CO.

MANUFACTURERS OF

GALVANIZED STEEL WASHING MACHINES.

Being made of **Galvanized Steel** is the **only washing machine** that will **not warp, rust** or be affected by **climatic changes. Absolutely germ-proof and perfectly sanitary.**

SPECIAL EXPORT OFFER:

Upon receipt of **$11.00** in U. S. Gold or its equivalent, we will crate (K. D.), ready for transportation abroad, and deliver f.o.b. New York,

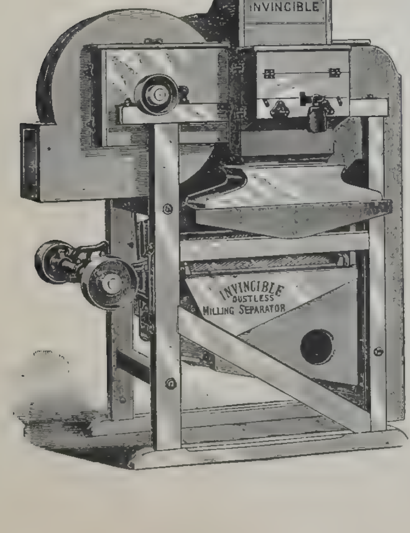
2 United States Galvanized Steel Washing Machines.

Each machine occupies six cubic feet, and weighs seventy-two pounds.

Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

UNITED STATES WASHING MACHINE CO.
1542 JUNCTION AVENUE, RACINE, WISCONSIN, U. S. A.

Invincible Dustless Milling Separator.



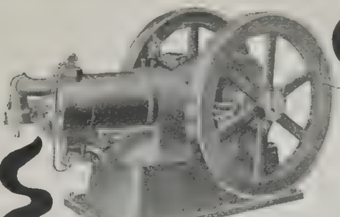
This Separator is very superior to all other makes and marks a long step in advance of its competitors. We claim that it possesses many new and valuable features as a wheat-cleaning machine.

It is strong, compact, light-running, economical and efficient. It does not waste or injure the grain, and requires but little care or attention to keep it in order.

This Milling Separator removes, without waste, all those impurities from wheat which lessen the value of the finished product, and consequently no flour mill is complete without one.

Send for full particulars to the manufacturers,

The Invincible Grain Cleaner Co.
(DEPT. M.)
SILVER CREEK, N. Y., U. S. A.
European Offices:
37-38 Seething Lane, London, England.



OLDS ENGINES

are used by the

U S. GOVERNMENT

Economical Power.

In sending out their last specifications for gasoline engines for West Point, the U. S. War Department required them "to be OLDS ENGINES or equal." This means they excel all others, or the U. S. Government would not demand them.

They are the horizontal type, 2 to 100 h.-p., and are so simply and perfectly made that it requires no experience to run them, and

REPAIRS PRACTICALLY COST NOTHING.

Send for a catalogue of our Wizard Engine, 2 to 8 h -p. (jump spark ignition system, the same as in the famous Oldsmobile), the most economical small power engine made; fitted with either pump jack or direct-connected pump. Or our general catalogue, showing all sizes.

Olds Gasoline Engine Works
LANSING, MICH., U. S. A.

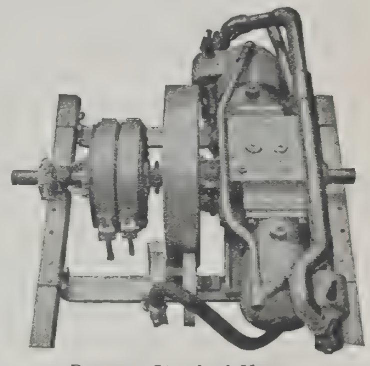
Niagara Falls, March 26, 1905.
BRENNAN MOTOR CO.,
Syracuse, N. Y.

Gentlemen:—Please find check as per enclosed invoice.

I want to say that engine is running perfectly. I am delighted. Made some little changes in the method of mounting and have overcome all the difficulties experienced last fall.

If I can be of any service to you in this part of the country, do not be afraid to refer any one to me, for I am out to do you all the good that I can, both for the way that my engine runs and for the treatment accorded me by your firm.

Very respectfully yours,
(Name given on application.)



Brennan Standard Motor mounted with Planetary Transmission Gear. Can also furnish Sliding Gear.

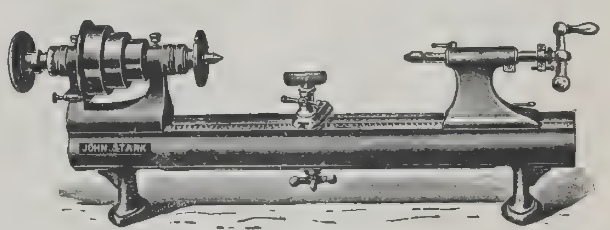
BRENNAN MOTOR CO., Syracuse, N.Y., U. S. A.
Manufacturers of
Standard Gasoline Motors for Automobiles, Boats and for Stationary Use.

STARK TOOL COMPANY,

Manufacturers and Exporters of

Precision Bench Lathes.

Also Full Line of Attachments and Fine Tools of Every Description.



Orders filled through commission houses.

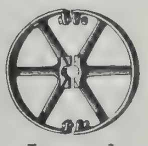
Correspondence solicited. Catalogue A on application.

Waltham, Mass., U. S. A.

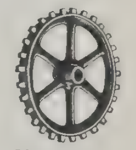
GEO. V. CRESSON Co.

MANUFACTURERS OF

POWER TRANSMISSION MACHINERY

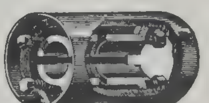


Improved Parting Pulley.



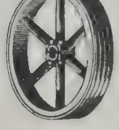
Chain wheels of all diameters.

SHAFTING.

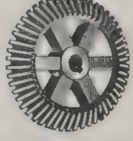


Patent Internal Clamp Coupling.

SEND FOR CATALOGUE.



Rope wheels, all sizes.



Machine moulded and cut gearing.

Allegheny Ave., West of Seventeenth St.
PHILADELPHIA, PA.

NEW YORK OFFICE, 141 LIBERTY STREET.

A Safety Device That Prevents Railroad Wrecks.

AN automatic electric signal apparatus, which is destined to prevent railroad wrecks and collisions and their consequent loss of life and property, was given a thorough test last month by the Pennsylvania Railroad near Pittsburg. If the device in actual operation performs all it did during this test, which was declared to be entirely successful, railroad horrors will be at an end whenever the railroads of the world adopt this mechanism.

The railroad superintendents and signalmen say the device solves the question of safety absolutely, for if it gets out of order it at once stops all traffic on that section of the road. The principal feature of the device is that it works independent of the engineer and thus eliminates the reliance heretofore put upon the memory of man. It works automatically.

In case of danger the engineer is warned by a bell or a whistle. If he does not at once shut off steam and apply the brakes, the device does it automatically after the elapse of five seconds. A clock registers the exact moment of warning and the time the brakes were set and the steam shut off. The neglect of the engineer to do this is recorded by the clock, which then opens an air chamber that closes the throttle and sets the brakes.

In case of a broken rail, a misplaced switch, an open drawbridge, or any defect in the track or system, and should another train enter on the same block at the same time, the engineer is warned by signal at once and he can stop and investigate the cause. If he fails, the clock automatically releases the valves that connect with the steam and brakes and operates them instantly.

This signal system is so designed that it can be connected up and made part of any signal system now in use. It is intended to assist the engineer in case he is unable to see the outside signals, or should anything happen that attracts his attention this system will, in case of danger, immediately take his place and stop the train automatically without any further assistance from him.

When an engine is equipped with this signal device, should a set of wheels from any of the trucks, or should a whole truck accidentally break or be thrown off the track, or should the train break in two, as often happens on freight trains, the system automatically goes into action and stops the train. Another point worth mentioning is the simplicity and inexpensiveness of construction. It does not use the third rail, as is common with the other automatic systems, but depends upon the locomotive wheels in contact with the rails themselves on the ordinary constructed roadbed for its operation. It is intended to supplement the block signal system, where in use, and can be installed as a complete system on roads having no such or other protection.

It is impossible for this signal system to fail in operation, for the reason that should the batteries give out, or any electrical connection be broken, either in connection with the circuit on the train or the circuit on the rails, the automatic danger signal and stopping mechanism will be thrown into action. The above claims have been established satisfactorily to the railroad officials and experts who were present at preliminary tests and who have described it as the only practical and satisfactory automatic device at present invented.

More people have been killed and maimed by railroads than in any other industry. For years the railroad officials have been putting forth every effort to obtain an absolutely safe electrical system. It seems that at last one has been obtained that fulfills expectations. Of course, it will be improved and new devices added to it, but the beginning of the end of railroad disasters seems to be at hand.

Americans Build English Tramways.

THE United States will furnish the materials for the construction and equipment of the electric traction systems in the suburbs of London. The value of this contract is about $900,000. It calls for the extension of the London United Tramways. The first section will be built in the Kingston, Surbiton, Malden and Wimbledon districts—about 10½ miles of double and nine miles of single track roadway. The second section will consist of five miles of double track in Hanwell and Brentford. The overhead trolley system is to be used. All the orders for rails, wire and electrical machinery will be placed with American manufacturers who, it is stated, will also get the order for cars and motors.

The firm of J. G. White & Co., of New York and London, get the contract. They also have secured contracts for building both steam and electric railroads in South America, which involves the expenditure of $25,000,000, in competition with British railroad builders. The order for these rails and other materials has been placed with the United States Products Export Company.

The principal South American contract is for building the Buenos Ayres Central Railway in the Argentine Republic, a line 320 miles in length. Extension and branches to this line will add 400 more miles, making the whole system 720 miles of single track road. This road will open up a great agricultural and mineral section of Argentina and eventually play an important part in the development of international trade. The White Company also will convert the Tramway Rural, the oldest mule road in South America, in Buenos Ayres, into an up-to-date electric system at a cost of $2,500,000.

Another $2,000,000 contract calls for the building of fifty miles of electric road in Montevideo, the capital of Uruguay. Thus it will be seen that, in open competition with the world, American contractors using American manufactured products have won. Not only have they won in South America, but they take work away from the Englishmen in the environs of the British capital. This can mean but one thing—American supremacy in railroad and tramway building, superior American machinery and superior workmanship, which with the proper prices cannot be beaten.

A Traction Ditch Digger.

THERE has been a large foreign demand for an ingenious traction ditcher that is very popular in the United States. The manufacturers have been compelled to quadruple the output of their plant to fill the orders. The machines are made in sizes for cutting trenches all the way between one 11½ inches wide by 4½ feet deep to one 54 inches wide and 12 feet deep. The special feature of the machine is its capacity for cutting to a perfect grade at a single cut, regardless of the uneven surface of the earth.

The company guarantees these machines to cut 3 feet of trench per minute at a depth of 3 feet in ordinary cutting, but there are many statements in the company's office which far exceed this guarantee. There is one case on record, for example, where a machine cut 2,050 feet 5 feet deep in ten hours; another where a trench a mile long, 40 inches wide and 65 inches deep was cut in thirty consecutive hours; another trench was cut at the rate of 100 feet per hour at a depth of 8 feet; 415 feet were cut in five hours at a depth of 11 feet, and 175 rods of tiling trench in ten hours.

The main features of the contrivance are boiler, engines and necessary machinery for operating the excavator, and the excavator itself, which consists of a wheel carried on the rear end of the truck which supports the machinery by means of a wire cable. The excavating wheel is made of steel rims and a series of buckets armored with tool steel knives and rooters which enable it to cut any material that can be picked with a hand-pick. The wheel cuts from the bottom of the trench up, and as there is no bottom in the bucket the earth is retained by means of an arc, which is held firmly to its place until the buckets reach a certain point, when they are discharged on an endless conveyor. The excavating wheel is without a hub, the power being applied to each side of the rim by means of steel gears.

Another Great Irrigation Work.

CONTRACTS for the largest irrigation dam in the world were let by the Secretary of the Interior a few days ago, says *Farm Machinery*. It will be located on Salt River, Arizona, seventy miles above Phœnix. The dam will be 270 feet high, 210 feet long, 165 feet thick at the base and 16 feet wide on top, creating a lake twenty-five miles long and nearly two miles wide. As a preliminary, forty-three miles of road have been built, some of which was cut through solid rock. Hydraulic gates, the largest ever built, will control the water, with a capacity of discharging 10,000 cubic feet of water a second, and supplying canals fifty miles distant. A 500-foot tunnel has been driven through the side of the cañon to divert the water while the dam is under way. The completion of the big dam is expected by 1907. Excess water from the reservoir will be conveyed to centrifugal pumps seventy miles distant to furnish water to higher levels for the irrigation of 50,000 additional acres. Part of the water power is now used to run a cement mill, the materials for which are close at hand.

This work will go forward day and night, the water power furnishing 4,400 horse-power to generate electricity. As much of the land is in the hands of private owners, they have agreed to convey 200,000 acres to the Government to repay it for expenditures. The pumping scheme is for Government land, and water is expected there within three years. Already settlers are filing claims for eight acres each, the maximum allowed one individual. They will have to wait two or three years for water, but are anxious to be conveniently placed when the plant is put in use. These operations are certainly interesting to the pioneers of other days, who never dreamed of getting ready to farm in a desert by the aid of dams, electric light, cement mills and centrifugal pumps run by water collected seventy miles away, with a resulting indifference as to whether it rains or not. Irrigation is full of wonderful possibilities, and it has become one of the big, practical facts of the period in the United States.

New Feed for Export Trade.—A new food for live stock and poultry made from alfalfa and molasses, produced in the western part of the United States, is building up a new industry. The product is easily packed and shipped. The "sugar feed," as it is called, is ground alfalfa mixed with molasses made from beet sugar refuse and ground corn, oats and barley. The plant manufacturing this feed is located at Omaha, Neb. M. C. Peters, the head of the new industry, says particular attention will be paid to the export trade. He expects to build up a large business with foreign countries, relying mainly upon the concentrated nature of the feed and its ease of transportation.

About 2,000,000 Cattle Dead.—It is estimated that the loss of cattle in the United States, due to cold and starvation during the winter just ended, was 2,000,000 head, or about 5 per cent. of the number of head feeding. From some quarters, however, the percentage reached fifteen and the total number of head lost may go much higher. Fresh beef prices in the United States are soaring as a result, and the foreign trade may expect higher prices.

New Ship Line to Cuba.—A new steamship service between New Orleans and Cuban ports was begun by the Munson line April 28th. The ships will touch at Santiago, Manzanillo and Cienfuegos. Through bills of lading will be issued both ways to interior points in the United States and in Cuba.

"NEW JERSEY" COPPER PAINT

A PAINT THAT PROTECTS.

LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,
JERSEY CITY, N. J. U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint,** manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."

PAINT.

Ready-Mixed Paints for Houses, Barns, Fences, Roofs, Iron and General Structural and Bridge Work.

American Copper Paint, Yacht Red and Yacht Green, Anti-Corrosive Submarine Composition, First Coat; Anti-Fouling Submarine Composition, Second Coat; for Bottoms of Iron and Steel Vessels.

WHITE LEAD, ZINC, COLORS IN OIL,
OIL AND VARNISH WOOD STAINS, PURITAN ENAMELS,
OLD GLORY METAL POLISH, in Liquid or Paste Form.

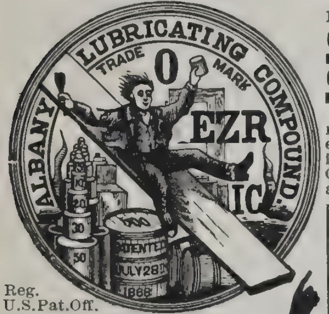
Sample Cards on application. Special Colors to order. Orders filled through commission houses. Correspondence solicited.

American Paint and Color Co.,

388 PEARL STREET, NEW YORK, U. S. A.

There Is Only ONE ALBANY GREASE

This Trademark on every package.



Reg. U.S.Pat.Off.

Look out for Yellow Label.

And we are the only Makers.
Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from ¼ to ½ in the cost of lubrication. Oils are advancing and it will pay to use **Albany Grease** at the present prices. Small 4-oz. sample free on application

To introduce abroad [only] will box ready for steamer and deliver in New York sample case of 100 lbs., containing two 10-lb. cans each Nos. 0, 1, 2, 3 and X Albany Compound at $12 American Gold, net. Case measures 36 x 14¼ x 7⅝; gross weight, 123 lbs. Order direct or through your Commission House.

Cable address: "OEZRIC," New York.

ADAM COOK'S SONS. - 313 West Street, New York, U. S. A.

The Premier American Shoe Polishes

OKOLITE,

An Oily Paste Polish for ALL Black Leathers, Also

Brown Okolite

For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for $12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

The Burckard Blacking & Oil Co., BALTIMORE, U. S. A.

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals:
Gold, Silver and Bronze.

Excels on Every Point.
Cheapest to Use in the End.

TESTIMONIAL.

NEW YORK, Aug. 8, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-TWO YEARS

RACING COMPOUND for Wooden Yachts' Bottoms, Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited,
GLOUCESTER, MASS., U. S. A.

Woolsey's Copper "BEST" Paint

HAS NO EQUAL,

As its increased consumption each year clearly demonstrates. The same can be said of our full line of Marine Specialties, of which we are the largest manufacturers in the world. We guarantee our Copper Paints to be superior to any other make.

Yacht Copper Red,
Yacht Copper Green,
Yacht Black,
Yacht White,
Rubber Seam Paint,

Marine Black,
Marine White,
Marine Green,
Bronze Green,
Smoke-Stack Black.

Anti-Corrosive 1st Coat **Iron Bottom Paint,** Anti-Fouling 2d Coat. Also Manufacturers of Varnishes, Japans and a full line of house paints.

C. A. WOOLSEY PAINT & COLOR CO.,
JERSEY CITY, NEW JERSEY, U. S. A.

FIRE LOSS

PREVENTED BY THE USE OF

Badger's Fire Extinguishers

In Use in All Parts of the World.

For full particulars apply to

E. B. BADGER & SONS CO.
40 Pitts St., Boston, Mass., U. S. A.

The Best-Selling Shoe Polish

IN AMERICA.

FOR LADIES' GENTS' AND CHILDREN'S SHOES AND ALL LEATHER ARTICLES
THE MODERN SHOE POLISH
BLACKOLA
MADE BY THE WORLD POLISH MFG. CO. YORK, PA.
PRODUCES A PATENT LEATHER POLISH GUARANTEED NOT TO INJURE THE LEATHER
TO REMOVE THE COVER TURN THE KEY
BLACKOLA PREVENTS THE LEATHER FROM CRACKING REQUIRES NO MOISTENING
KEY

TO OPEN THE BOX
TURN THE KEY.

EVERY BOX HAS OUR OPENING KEY ATTACHED TO REMOVE THE COVER.

BLACKOLA is different from every other shoe polish in quality and convenience.

MANUFACTURED SOLELY BY

THE WORLD POLISH MFG. CO.

Dealers are requested to write for sample.

YORK, PA., U. S. A.

Uses of Electric Motors.

THE use of small electric motors to drive machinery in the factory, the mine, the hotel and the home is constantly growing. The United States is fast becoming an electrical power-using nation. Other forms of energy are being driven out before the onslaught of the electrician and electrical engineer. Mr. Fred. M. Kimball, who has made a study of the uses to which the electric motor is being put has a series of articles in *Cassier's Magazine* on that subject. From them we quote:

"Laundry machinery is largely operated by electric motors, and especially is this true of centrifugal dryers and mangles. An attempt has recently been made to operate family washing-machines by motors, and the results which have attended the preliminary experiments have been highly gratifying. . . .

"In the large hotels and restaurants. motor-driven blowers, pumps, dumbwaiters, exhausters, knife-cleaners and chopping and mixing machines are in evidence on every hand, while the number of electrically operated sewing-machines in the homes of the country is increasing very rapidly.

"Recently, motor-driven polishers have been brought out for use in caring for the hardwood floors in large halls and public buildings; motor-driven sweepers, which are used in some of the large department stores for quickly sweeping the long aisles and wide-open spaces, and also electrically operated carpet-sweepers for domestic use. These last are said to perform marvelous work in removing dust and litter of all kinds from carpets and rugs. The peculiar stroke of the rapidly moving brush whips up the finest particles out of the pile of the carpet or rug and effectually prevents the lodgment of foreign matter in it. . . .

"The electric motor is also largely employed by the medical profession. Physicians find it of great value for operating atomizers, various special devices for massage purposes, and in connection with the many forms of apparatus which have been devised for effecting special exercises of the human body. Very ingenious gymnasium exercises have been developed, such as those exercising the muscles of the body, as in horseback riding, walking, running and various exercises of the arms and shoulders. . . .

"Modern printing-offices, bookbinderies, and the allied trades, too, make extensive use of electric motors. Nearly every mechanical operation necessary in the preparation of a book may owe something to an electric motor. The author's manuscript was written on a motor-driven typewriter, and the matter was set up on a motor-driven linotype machine. Stereotype plates are trimmed, planned, sized and formed by motor-driven machinery. The press on which the book is printed may be driven by an electric motor, for which the ink may be ground in motor-driven mills, and, if the edition be a large one, it will probably be printed on a press provided with automatic motor-driven feeders. The sheets, as printed, are folded by a motor-driven folder. . . .

"Many interesting, special and labor-saving, electrically operated tools may now be found in manufacturing establishments. A portable drill, such as that shown in the illustration, is of the greatest utility where a number of holes are to be drilled in a piece of work which it is inconvenient, owing to its size or weight, to move to and around a stationary drill. The drill can be clamped on to or alongside of the work, and, by means of the traveling carriage and radial swinging arm, the drill mechanism may be brought to bear on, or operate in, the work within a comparatively large radius. . . .

"In the western part of the United States and in Mexico the small electric motor is much used for operating pumps employed in distributing water for irrigating purposes in those sections where the rainfall is very scanty or entirely absent. Vast tracts of otherwise fertile land, capable of raising foodstuffs to supply millions of people, have never been utilized, owing to the scarcity of water. Many of these tracts are underlaid, at a depth of few feet, by moisture-bearing strata or subterranean water-courses. Small, direct-connected, motor-driven pumps, supplied with electric power from long-distance transmission lines, are now enabling the reclamation of thousands of acres of this land.

"Mining engineers are adopting the motor-drive and electric distribution of power in much of the new developmental work now being undertaken, and the substitution of electricity for compressed air is making considerable advance in the reequipment of some of the mines already in production. . . . Pumping, hoisting, ventilating, haulage, and, recently, rock drilling, by means of electric motors illustrate how the power supply may be distributed not only more directly and compactly than by systems employing pipes, but also at materially decreased expense of direct attendance and losses of transmission."

American Oil Prices Reduced.

THE price of American refined petroleum has decreased nearly 1 per cent. a gallon for the export trade since December 1st of last year. On April 11th another reduction of ten points was announced, making the export price 7.05 cents for New York and 7 cents for Philadelphia, loading in barrels. The bulk price now is 4.15 cents in New York, and 4.10 cents Philadelphia loading; case oil is 9.75 and 9.70 for New York and Philadelphia, respectively. Crude oil was followed by a cut of 3 cents a barrel. The various reductions in price were made on December 1st, 15th and 28th, 1904, January 4th, 10th, 30th and March 24th.

The latest reduction, which is somewhat of a surprise, is thought to have been made to meet foreign competition. Refined oil has been moving freely of late. A large percentage of oil steamers have been on this side during the present month and shipments of barrel and bulk oil have been very heavy. The foreign markets have been easier.

United States First in Boot and Shoe Exports.

THE United States now ranks first in the export boot and shoe trade, having during the month of March passed the United Kingdom, which has always held that place. During March the United States export trade in boots and shoes was valued at $802,361, against $756,892 for England. Last year the United Kingdom exported $400,000 more than the United States. But the English record now has been passed and the United States is in the lead.

When it is taken into consideration that the average price of boots and shoes exported from the United States is $1.52 per pair, while those exported by the United Kingdom average but 95 cents a pair, it will be seen that superior quality is being demanded by the foreign consumer and the United States is producing the quality that is wanted.

The United States exports boots and shoes to all parts of the world, about one-half going to North America, about one-third of the total to Europe, about 10 per cent. to Australia and the Philippine Islands, and the remainder to South America, Africa, Asia and various other countries. The United Kingdom and British possessions are by far our largest customers for boots and shoes. To the United Kingdom our exports during 1904 amounted to $1,757,724; to the West Indies, $1,585,909; to British Australasia, $644,270, and to British Africa, $229,841. Mexico ranks fourth as a market for American boots and shoes, and to that country our exports show a steady growth, having been $878,535 in 1904, as against $689,331 in 1903 and $680,607 in 1902. Canada and the other British North American provinces also offer a growing market for American boots and shoes, our exports to that section of the Western Hemisphere having been $944,247 in 1904, as against $744,290 in 1903, and $591,829 in 1902. Our total exports of boots and shoes have increased from $880,179 in 1894 to $6,470,412 in 1902, $7,244,726 in 1903, and $7,319,775 in 1904.

Exports of leather and manufactures thereof from the United States during the calendar year 1904 amounted to $35,800,000, as against $23,000,000 from the United Kingdom, and during the first quarter of the present calendar year those from the United States amounted to $9,128,837, as against $6,425,911 from the United Kingdom during the same period. A statement just compiled by the Department of Commerce and Labor through its Bureau of Statistics presents the statistics of leather exportations from the United Kingdom and the United States, respectively, during the past decade. They show that the United States is exporting leather and the manufactures thereof at the rate of about $36,000,000 per annum, as against about $23,000,000 for the United Kingdom. Of the exports of leather from the United Kingdom, amounting, during the past year, to $23,146,383, the largest portion was unwrought leather, tanned or dressed, the exports of which amounted to $8,320,000; the next largest item, boots and shoes, amounted to $7,689,000; miscellaneous manufactures of leather, $4,790,000 (of which $3,655,000 represented the value of gloves exported), and harness and saddlery, $2,320,000.

Of our own exportations of leather in its various forms the principal articles are for the calendar year 1904, upper leather, $18,025,204; sole leather, $8,685,190; boots and shoes, $7,319,775, and miscellaneous manufactures of leather, $1,794,323.

Americans Buy Tropical Lands.

AMERICAN capitalists are again investing heavily in tropical agricultural lands in Mexico and Central America for the purpose of cultivating coffee, rubber and bananas. Formerly it was the large corporation that bought up these lands, but now it is the smaller company with ample capital.

Cultivated rubber is no longer an experiment but a fact. The depletion of the rubber forests of South America has created an imperative demand, and soon these rubber plantations will be producing enormous profits. The coffee plantations of Mexico and Central America are yielding enormous revenues to the owners, who are cultivating them scientifically, while the banana plantations of Costa Rica are perfect gold mines to their proprietors.

Many Americans are investing in these lands for speculative purposes. With the coming of new railroads and the completion of the Panama Canal, they figure, these lands will wonderfully increase in value within the next five or ten years. Others are developing the lands in the belief that they will receive rich returns.

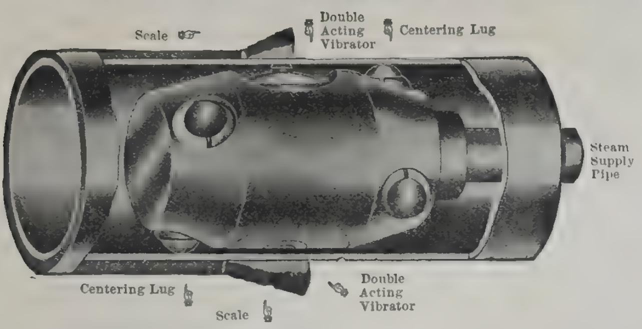
Paper Wrapping Machine.

A NEW newspaper wrapping machine recently has been perfected by a Dayton (Ky.) manufacturer. The apparatus feeds, folds, wraps, posts and addresses automatically 5,000 papers per hour, and its inventor claims that he will soon have it speeded up to 10,000 per hour. A good wrapper can handle only 1,000 per hour. Thus this new machine takes its place beside other labor-saving apparatus, as it will do the work of ten men. It only occupies the space usually taken by two men.

The wrapping paper is fed from a large roll. When the machine has folded the paper the wrapper is cut off and wrapped tightly around it. A paste fountain, acting like an ink fountain, gums one end of the wrapper and a roller presses down the ends, thus completing the folding and pasting.

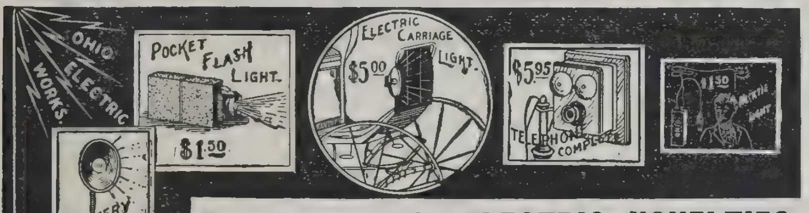
The electrotyped addresses are fastened on a continuous brass belt and are inked by a roller fed with an ink fountain. The pressure of the inked electrotype against the wrapper prints the address and the newspaper is then dropped into a receptacle which automatically separates the papers according to States, routes and post-offices.

THE TORPEDO REMOVES SCALE.



The Torpedo is similar to the pneumatic tools, but is used only for jarring scale from the *outside* surfaces of fire-tube boilers. This machine runs with steam or compressed air, tapping the inside of tube at 3,000 times per minute, breaks and jars off all scale from the outside. The Torpedo cleans the tubes which are impossible for a man to reach, and is saving hundreds of steam users many times its cost every year. Made for tubes 1½-8 inches in diameter. Order sample through any American exporter. Write to-day.

The General Specialty Co., 70 Carroll Street, Buffalo, N.Y., U.S.A.



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WE ARE SELLING

Battery Hanging Lamps	$10 00	Genuine Electric Insoles	$0 25
Telephone, complete	5 95	Telegraph Outfits	2 75
Electric Door Bells	1 00	Battery Motors from $1 to	12 00
Electric Carriage Lights	5 00	Battery Table Lamps	3 00
Battery Fan Motor	5 95	Necktie Lights, 75 cts. to	3 00
Electric Hand Lanterns	2 00	Bicycle Electric Lights	2 25
Pocket Flash Lights	1 50	Electric Cap Lights	2 00
Miniature Electric Lamps	40	Electric Railway	3 50
$8 Medical Batteries	3 95	Battery Student Lamp	4 00
Genuine Electric Belts	1 00	Dry Batteries, per dozen	2 25
$12 Belt with Suspensory	2 50	Electric Books at	Low Prices

We Excel and Undersell All on Everything Electrical.

PRINTED MATTER IN ALL LANGUAGES.

OHIO ELECTRIC WORKS, CLEVELAND, OHIO, U. S. A.

Agents wanted. Send for New Catalogue. Cable Address: "Fletcher, Cleveland."

PATCH'S PATENT

"Black Hawk"

Corn Sheller and Separator.

14th Year of Success.

BEST Hand Sheller ever made. Original, Honest, Durable. Shells rapidly; takes every grain off the cob. Easy to use and always ready.

WILL LAST A LIFETIME.

Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of **Malleable Iron.** All bearings chilled. Attached to any box **Instantly by Clamps.**

SPECIAL EXPORT PACKAGES. Order direct or through any reliable Export Commission House.

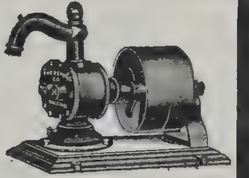
Beware of Imitations. Insist on having Patch's Patent "Black Hawk" Corn Sheller. All others are **Frauds.**

A. H. PATCH, Patentee and Sole Maker, **Clarksville, Tenn., U. S. A.**

DEMING PUMPS,

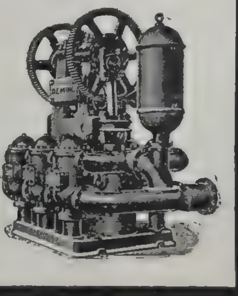
HAND AND POWER,

Known everywhere as "THE WORLD'S BEST."



Cistern and Pitcher Spout Pumps, Hand and House Force Pumps, Deep Well Pumps and Standards, Iron and Brass Cylinders, Windmill 3-Way Pumps and Standards, Triplex Power Pumps, Rotary Pumps, Hydraulic Rams, Irrigating Pumps and Cylinders, Spray Pumps, etc., etc.

Catalogues furnished in English and Spanish.



The Deming Company,

SALEM, OHIO, U. S. A.

New York Office: 56 Pine Street.

Orders executed through New York export merchants.

PRESIDENT SUSPENDERS

Known everywhere for their comfort, style and service. Made in four weights; hundreds of different patterns.—Absolutely guaranteed—Genuine has "President" on buckles.

BALL=BEARING GARTERS

Swing like a pendulum with the motion of the leg. Lay flat; no binding; fit every leg perfectly. Easily adjusted. No stitching. Extra long adjustment.

Finest web, in many colors and patterns; packed in handsome boxes, 12 to carton. Handsome counter display carton with 8 doz.

PRESIDENT SUSPENDERS, $4.37½ per doz., for all models except "Extra Fine," which are $7.19 per doz.

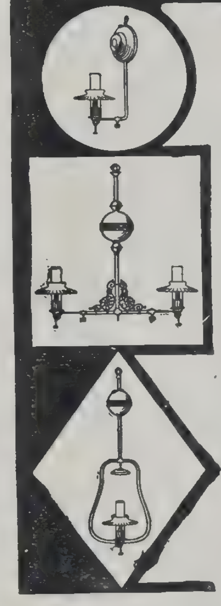
BALL-BEARING GARTERS, per doz., $1.95. Terms, net spot cash, f. o. b. New York.

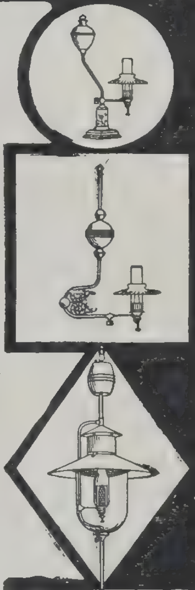
Liberal Discount on above prices in Quantity lots. Write for *Discount Sheet.* Illustrated Catalogue free.

The C. A. EDGARTON MFG. CO., Box 12A, Shirley, Mass., U. S. A.

AGENTS WANTED EVERYWHERE FOR

THE BEST LIGHT





The Cheapest and Strongest Light on Earth.

Makes and burns its own gas. It is portable; hang or set it anywhere Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

SUPERIOR TO ELECTRICITY OR ACETYLENE AND CHEAPER THAN KEROSENE.

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations and infringements.

Write for Catalogue. Lists and Discounts. Orders received direct or through exporting houses.

Manufactured by

The BEST LIGHT CO.

73 E. 5th St., Canton, Ohio, U S A.

Cable Address: "BEST." Canton, Ohio.
Codes used Liebers: A, B, C 4th and 5th Eds., W. U. Tel. Co. and Our Own.

THEY CUT, PLANT, SPRAY, DIG and SORT.

Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

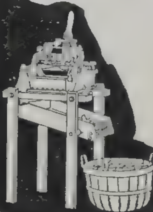
We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

Our catalogue, illustrating and describing the various styles of

ASPINWALL POTATO

Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.



Aspinwall Mfg. Co., Jackson, Mich., U.S.A.

American Packing Houses Are Clean.

SOME weeks ago the *London Lancet* published a series of articles which condemned the Chicago packing houses, alleging they were unclean and unsanitary. As these articles were given wide circulation *Collier's Weekly* decided to have a thorough examination of these packing houses made by an expert. Maj. L. L. Seaman, M.D., L.L.B., was chosen to do the work. Major Seaman visited each packing house in Chicago and made a thorough and minute examination. His report will be of vital interest to the export trade, as a great bulk of the packed and canned meat products is exported to all the countries of the world.

Major Seaman emphatically declares that the *Lancet* articles are unfounded. The fact is the packing houses are conducted on absolutely sanitary methods. Cleanliness is demanded and enforced. Each house is under the inspection of United States Government experts. The whole guarantee of the United States is back of the sanitary methods employed in dressing the meats. Major Seaman in his report says in part:

"Before going into the question as to the actual sanitary condition of the stockyards, it is well to note what the Chicago stockyards really are. The stockyards are owned by a corporation known as the Union Stock Yard and Transit Company of Chicago. The Chicago stockyards form the leading livestock market of the world; they embrace a region, in round numbers, one mile long and one-half mile broad, covering a territory of five hundred acres. Of this area four hundred and fifty acres are either bricked or planked, thus answering the complaint of the *Lancet's* commissioner that the streets and pens of the place are unpaved; in fact, it may be said that the streets and pens are practically all paved. One may walk for miles and miles along the streets and runways of the stockyards and not see a pen or street that is unpaved. The pavements are of brick, and occasionally of wood.

The reason why the killing takes place on the upper floors of the buildings is because labor-saving methods are necessary, and it serves the purpose of quick distribution and saves the expenditure of labor in disposing of the products by gravity, and thus making the delivery of the finished products on the ground floor to trains and wagons a simple matter. It would be absolutely impossible to have these slaughter houses on the ground floor and in abattoirs, as they exist in German and other European cities, where the product handled is comparatively insignificant in proportion to that handled in Chicago. After the animals are killed the carcasses are dressed and stored and the by-products are manufactured. This, in a general way, sums up what is done there outside of the business of merchandizing the various finished products.

"The first question of importance in regard to the protection of the people is what precautions are taken in the way of inspection, so as to exclude livestock that is tainted with disease. The United States Government, through the Bureau of Animal Industry of the Department of Agriculture, has set up a system of Government inspection to protect the people from impure meat. This force in the Chicago stockyards consists of one hundred and seventy inspectors, about fifty of whom are veterinarians, and in addition there are about eighty women microscopists, whose duty it is to search exclusively for trichinæ in pork, through the examination of specimens from carcasses intended solely for export to Germany, France, Austria and Denmark. This Government inspection is not obligatory upon the meat packers, but none of them can do business without it, and therefore all have requested it, and each, in fact, is practically compelled to request the Government to furnish this inspection service.

"The special inspection of hogs for trichinæ is required solely because the four European countries which have been mentioned will not permit importations of pork from this country unless there is a Government certificate with each importation to the effect that the meat is free from this form of disease. One reason why the Governments of those countries are particular as to trichinæ is due to the fact that large quantities of raw meat are eaten by their peoples. The people of the United States and Great Britain, on the other hand, rarely eat raw meat. A boiling temperature will kill trichinæ, and therefore it has been held that inasmuch as English-speaking peoples almost never eat raw pork, the presence of these parasites in the meat that is consumed by this country and Great Britain is not a serious menace to health. And to some extent this would seem to be borne out by the fact that cases of trichinosis are very rare, especially in the United States. There has been only one recorded death from trichinosis in Chicago, where large quantities of pork are consumed by the foreign element especially, in the last seven years.

"The Government inspection of animals in general consists of two parts—the ante-mortem and post-mortem. The ante-mortem inspection is made when the animals are weighed on the scale, and the post-mortem inspection is made immediately after the animals are killed and as they are passed along to be dressed. A trained eye, of course, can detect many diseases as the animals pass over the scales. The post-mortem examination consists of feeling the various glands of the throat, and an inspection of the condition of the lungs and the diaphragm and internal organs generally. These inspectors sit or stand close to the killing stations, and not an animal can pass their scrutiny unless they are willing to have them do so. Whenever an animal is found to be tainted, it is wired with a "condemned tag" and segregated at once.

"The ante-mortem inspection is for such diseases as hog cholera, anthrax, pyæmia and septicæmia, Texas fever, pneumonia, pleurisy, mange, actiomycosis or lumpy jaw, and others, together with advanced pregnancy; while the post-mortem inspection is for those diseases which are strictly internal. It is a fact that practically every animal that is killed in any of the slaughter-houses in the stockyards receives both of these government inspections. The reason for this is that the packers cannot tell which of the carcasses will be used in interstate commerce or for export. An exception, however, is made in hogs, because certain hogs are set apart for the trichinæ examination, in order to fill the orders from the four foreign countries which require special examination for trichinosis. . . .

"In each building the floor was well lighted and well ventilated. It must be remembered that Chicago is actually a 'Windy City,' and that the use of this appellation has a real and proper basis of fact. The result is that probably no city in the world has better ventilated buildings than Chicago, if the persons who are in them only open them to the wind. The buildings in the stockyards are emphatically open to 'the four winds that blow,' and most of the large ones are isolated, and so far as the killing departments are concerned it would be incorrect to say that they suffer from any lack of ventilation. The exclusion of light in many departments has its advantages, notably in spring and summer, when the myriads of flies that would flourish in sunshine would become a serious menace to the maintenance of healthful surroundings.

"In all the places where animals were dressed after being killed there was more or less steam, more or less odor, and not as much light and ventilation as on the killing floor. The removal of viscera and the separation of the parts for tankage is dirty work. And incidentally it is worth while to call attention to the fact that the stockyards business in no way relates to or has any correlation with an art gallery or with any other of the refinements of civilized life. Neither is it calculated to discourage any spectator who witnesses its operations from adopting and pursuing a vegetarian diet.

"It is on the floors where the animals are dressed (to which the *Lancet* objected) that the openings of the destroying tanks are found. These tanks are reached by troughs or conduits, and into them all products that are to be destroyed are promptly emptied. The covers are sealed by the Government inspectors, and live steam is turned into the contents, which are cooked for five hours. The tank reaches to the floor below, and the bottom, like the top, is also sealed. This seal cannot be removed except in the presence of a Government inspector. The contents are drawn out and used for the manufacture of fertilizers, and one has simply to examine the bottom of one of these tanks, as I did with the closest scrutiny, to see at a glance that all yarns to the effect that the contents are drawn from them secretly at night to be worked over into sausage are the veriest nonsense.

"To sum up, these conclusions seem to be justified:

"There is no tainted meat sold from the Chicago stockyards. In the main, the buildings are in a fair sanitary condition, but it does not follow that there could not be improvement.

"The streets are fairly well paved and so are the pens, but they are not cleaned as thoroughly as they might be; however, it is fair to say that they are better cleaned than the average streets of Chicago.

"The cars in which packed meats are shipped are kept scrupulously clean, but those used for the transportation of livestock are not kept as clean as they should be.

"The water supply is equal to that of the rest of the city of Chicago, and its use in cleansing operations is made more sanitary than in ordinary business plants by sterilizing it before it comes in contact with the meats."

A Handy Combination Tool.—A Kansas City man has invented a household tool which, in reality, is a whole workshop. A pair of pincers form the base. One side of the pincers carries a hatchet, the other side a hammer head. One side of the pincer handle tapers into a screw-driver, the other is curved and clawed for a nail-puller. The claws of the pincers are grooved and can be used to tighten wires. A sharp-edged slot between the claws is designed to cut wire. Thus this tool can be used as a hatchet, a hammer, a screw-driver, a wire-ripper, a pincer, a nail-puller and a wire-tightener. It is strong, sharp and simple. William H. McLeod, of Kansas City, is the inventor.

New Railroads in the United States.—The enormous industrial progress of the United States in 1905 is reflected in the great activity in railway building. Almost daily new projects come to light and new contracts are let. A total of 7,500 miles is now under construction or under contract, and 9,332 miles are projected, making a total of 16,832 miles. Every State in the Union, save two or three in New England, is extending its railway mileage. Mexico and Canada, too, contemplate vast extensions to their railway systems.

Salmon Canners to Shut Down.—The Puget Sound and Fraser River salmon canners propose to discontinue packing salmon in 1906 and again in 1908 in order to preserve the industry, as the fish are growing scarcer year by year, and the Government has neglected to take any precaution to stop exhaustion of the streams.

Fourteen New American Ships.—During the month of April eleven sail and steam vessels of 37,744 gross tons were added to the American merchant marine. From other sources than construction 6,185 gross tons were admitted to the merchant fleet, being three foreign vessels wrecked in American waters, rescued and repaired.

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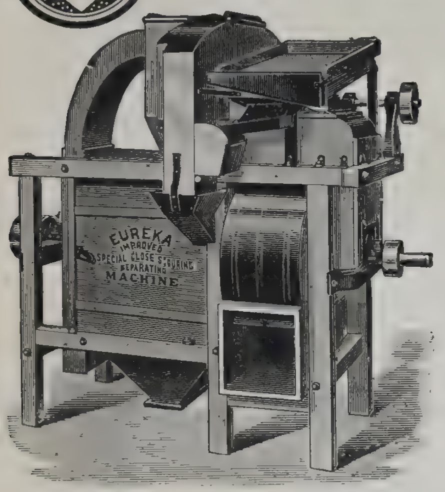

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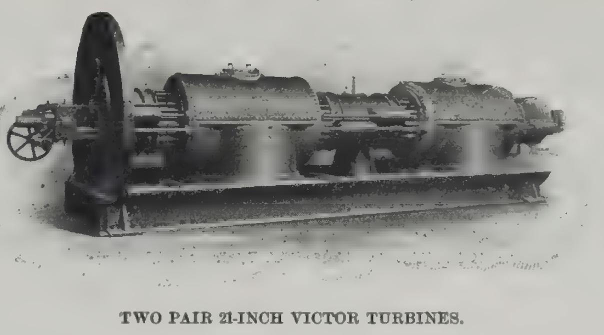

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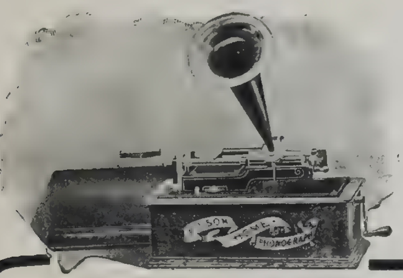

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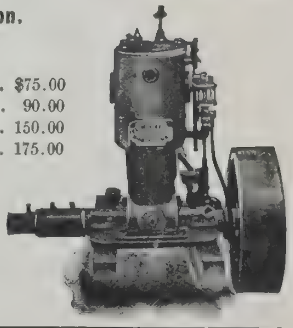

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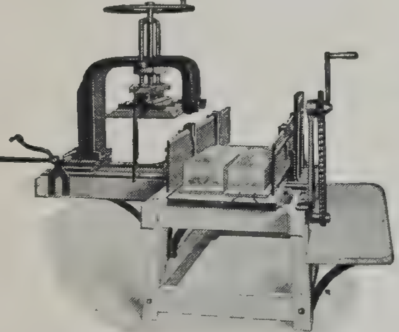

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To Increase Power of The Hague Court.

RICHARD BARTHOLDT, president of the recent peace congress at the World's Fair, is in Europe to attend a meeting of the Executive Council of the Interparliamentary Union at Brussels. The main object of this union is to increase the powers of the international court at The Hague. Before sailing Mr. Bartholdt said:

"The population of South American nations is considerably larger than that of the United States and Canada. Manifestly, these nations have a place in the international unions, and these unions will be imperfect until all the South American countries are in their places. They will come in some time, I know, but they are needed now.

"Nations that are to the front in the arbitration movement, in making treaties with one another, would include as subject to the court's decision a great many questions. More backward nations—or nations that harbored ill-feeling toward one another—would probably reserve more questions for decision on the field of battle. As they became more friendly, and as the court showed itself more worthy of trust, they would increase in the treaties the number of the questions subject to arbitration.

"It might be well to allow for an appeal to arms from a decision of the court affecting the independence or autonomy of a nation."

Another question proposed by the American group for discussion at the next session of the union is the establishment of an international congress. The court, the congress, and the treaties will make a system of international arbitration.

In his plan for the international congress Mr. Bartholdt intends to suggest that every nation, while remaining in the congress, shall have the right to arm itself according to its own judgment. The reason for including this stipulation is that nations, supposedly, would not yet know how far to trust another's faithful observance of these compacts even after they are made.

Corea Now a Gold Nation.

COREA becomes a gold nation on June 7th. Four years ago Corea announced that she had gone on a gold basis, but nothing came of it. Now Japan, acting for Corea, announces that this month the new coinage law is effective. The new law adopting the gold standard also recalls the present currency as follows:

The old coins shall gradually be exchanged for new coins, or withdrawn from circulation, according to the convenience of the Government, at the rate of 10 silver ryo (the same for 2 silver yen) for 1 gold yen. The exchange of the old nickel coins shall take place on July 1st of the ninth year of Kobu (1905). The end of the period of exchange of the old nickel coins shall be fixed, in terms of more than one year, by the Minister of State for Finance. The old nickel coins shall be prohibited from circulation after the expiration of that exchange term, but the same may be used for the payment of taxes during the six months after that prohibition. The method of exchange and retirement of the old coins and also the place of exchange shall be fixed by the Minister of State for Finance. This table is of interest in connection with the foregoing: Two old nickels equal 1 new nickel; 10 ryo, 1 gold yen; 2 silver yen, 1 gold yen.

Cheapness of Gasoline Lamps.

SEVERAL new gasoline lamps that have proved to be of the utmost value to householders and country merchants who are outside the routes of gas-pipe lines or electric wires have lately made their appearance on the American market. These new gasoline lamps produce as clear a light as the electric currents and are much cheaper to operate, so economical, in fact, as to put them within the reach of all.

Gasoline is a highly volatile fluid refined from crude petroleum. When heated to the proper temperature it forms a gas that greatly surpasses in brightness and clearness the ordinary illuminating gas. The lamps and burners employed make the use of gasoline as safe as kerosene.

The lamps are simple to operate. The gasoline is conveyed to the burner through a small tube, being heated before it reaches the burner. This converts the oil into a gas. Over the burner a mantle of fireproof gauze is suspended. This mantle diffuses the light until it becomes a clear white and at the same time intensifies its power and brilliancy. A large quantity of air is mixed with the gas just before it enters the burner, and this air is consumed with the gas and greatly improves its quality as well as reducing the amount of oil required to produce the gas. The lamp is clean and cheap. It does not smoke or accumulate grease or carbon. The cost is less than one-fourth of a cent an hour.

These lamps are made in many sizes and styles and are adapted for homes and business houses alike. They are peculiarly useful to miners, traders and explorers in foreign lands and to the inhabitants of small towns and farms where neither gas nor electric light is obtainable.

New Postal Ruling.—After September 1st the United States Post-Office Department will refuse to allow newspapers to include in their supplements calendars, sheet music, patterns, post-cards, cut-out animal pictures, cardboard specialties, disks of soluble paint, etc., except at regular third-class rate of postage.

Baron Keneko on the "Open Door."

"THE triumph of Japan in the pending war," says Baron Keneko, who is in the United States to study industrial conditions, "means simply peace, progress and the open door in China. It is not the intention of Japan to enlarge her boundaries at the expense of other nations. Japan must trade beyond her borders. Russia shut up her chief market. War was necessary to regain Japan's rights. The success of Japan means that the markets of China must be thrown open to the whole world. It means that the United States will recover her trade with Manchuria which Russia destroyed when she gobbled up that province.

"In the next five or ten years American trade with the Far East, particularly with Japan, will expand with enormous rapidity. The reason is plain. We have to depend on America for raw materials, and you have to depend on Japan for raw materials. Our cotton factories depend entirely upon American raw cotton. We must depend on you for tobacco leaf. We look to you for breadstuffs, for iron and steel, cast, bar and sheet iron, and machinery. These things we cannot make in our country.

"On the other hand, we send you raw silk—you cannot raise it. We give you about $50,000,000 worth of tea each year. In other things which never compete we provide your country, and the balance of trade is carried out by this means.

"At present we cannot tell when the war will end, but sooner or later normal business conditions must return. We have spent enormous sums of money. We have had a great strain on our financial power. It will take four or five years for us to recover, and by that time the United States will have established a firm grasp on the East, since you have such low interest on your money, such tremendous money power and skilful business men. The United States will be the gainer, and you will have trade there pretty much your own way."

A Great Maritime Exposition.

MAYOR McCLELLAN, of Greater New York, has called to the attention of the National Government a plan to hold an international maritime exposition in the Hudson River and New York harbor in 1907 to celebrate the centenary of the first steamboat, the *Claremont,* built by Robert Fulton. The idea was started by the Maritime Affairs Committee of the Board of Trade and Transportation. The proposition consists of the assembling in the Hudson River of vessels of every type of ancient craft in existence to modern ocean liners and battleships. It is proposed to invite the governments of the world to send representatives from their navies to participate. Should the project take root and be favored by the various foreign governments no effort will be spared to make it the greatest exposition of steam craft ever assembled.

Ties That Last Thirty Years.

AT a recent meeting of the New England Railroad Club H. E. Astley read a paper on track maintenance, in which he stated that in 1871 the Boston and Providence Railroad laid 100 lignum-vitæ ties in its tracks near Readville, Mass. Recent examination showed that these ties were still sound and in an excellent condition, after thirty-three years of service in main track. The ties cost $4.42 each. Such a price, of course, puts the ties entirely beyond the possibility of use, from economical considerations, but, as a matter of curiosity, the record is a remarkable one. There are, however, other woods which have shown equal longevity of service. There are redwood ties in side tracks in California, and the pine ties in the alkali soils of Nevada, which have been in track longer than thirty-three years. The quebracho Colorado wood is very hard, perhaps as hard as lignum-vitæ, and in the Argentine Republic, where it is produced, there are many examples of ties which have been in service upward of thirty years. This wood is not so expensive as lignum-vitæ, and it is being used for railroad ties in large numbers in several countries.

Making American Opium.—Despite the protests from many quarters, the United States Bureau of Plant Industry is continuing its experiments in the making of opium. Professor Galloway has discovered a simple process for the distillation of opium from the poppy which, he believes, will enable the American farmer to compete successfully with the Chinese producer. By his process Professor Galloway does away with the greater part of the labor expended upon poppy culture and opium-making. The foreign market need not be surprised to see soon cans of opium labeled "grown and manufactured in the United States." Once this profitable drug trade is started the American farmer and chemist will not let it lag.

American Petroleum in Greece.—Owing to some complications not made public, the Greek Government has placed a large order for American petroleum in New York. There has been considerable complaint of late in foreign countries over the quality of the oil furnished by the Russian monopoly. It is agreed that the American oil is much superior and the Russians are improving the quality of their output and are offering better terms to the trade. In spite of this, however, the American goods are fast gaining a headway, and the American company seldom gives up a customer once gained.

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Lamps for Lighting Streets, Stores, Parks, Wharves, Mines, Plantations and Private Houses.

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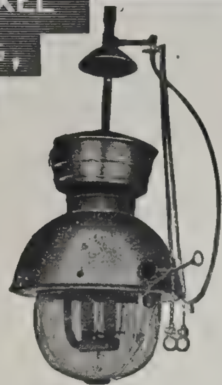

No. 190x. Outside Lamp; outfit with tank; 2,000 candle-power; 30 inches.

No. 501. Bracket Lamp; outfit with tank; 1,000 candle-power; 15 inches.

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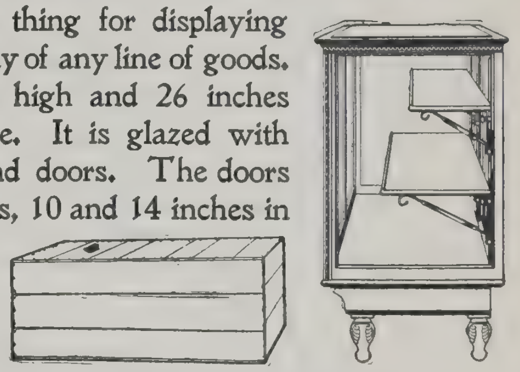
SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



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Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 384 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

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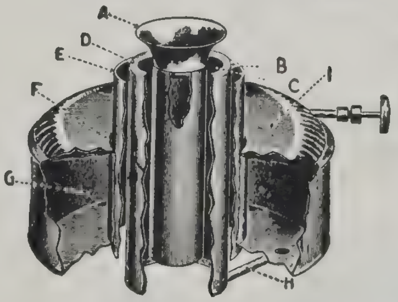

A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

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Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high-speed machine, made of **STEEL,** nickel-plated; **capable of 20,000 revolutions per minute,** and can be put in motion by a child in three seconds. Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

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Upon receipt of $9.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, one gross (144). IRVING'S NEW WIZARD OR "GY-ROTARY" TOPS. Weight, boxed, 30 pounds. Size of box, 17⅛ x 8½ x 8½ inches. **ORDER NOW. YOU WILL SURELY WANT MORE.**

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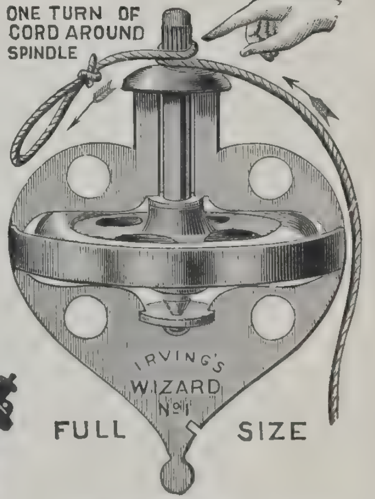
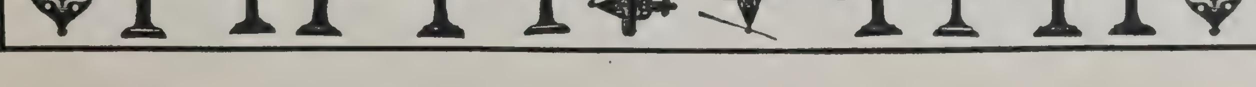
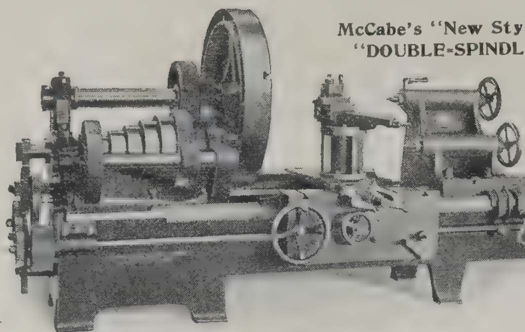

ONE TURN OF CORD AROUND SPINDLE
IRVING'S WIZARD No 1
FULL SIZE



Patent Applied for July 19, 1904.



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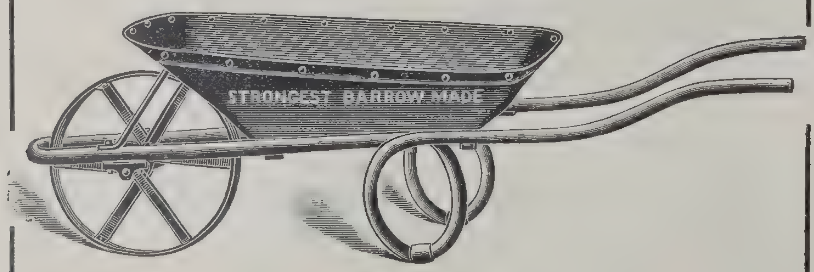

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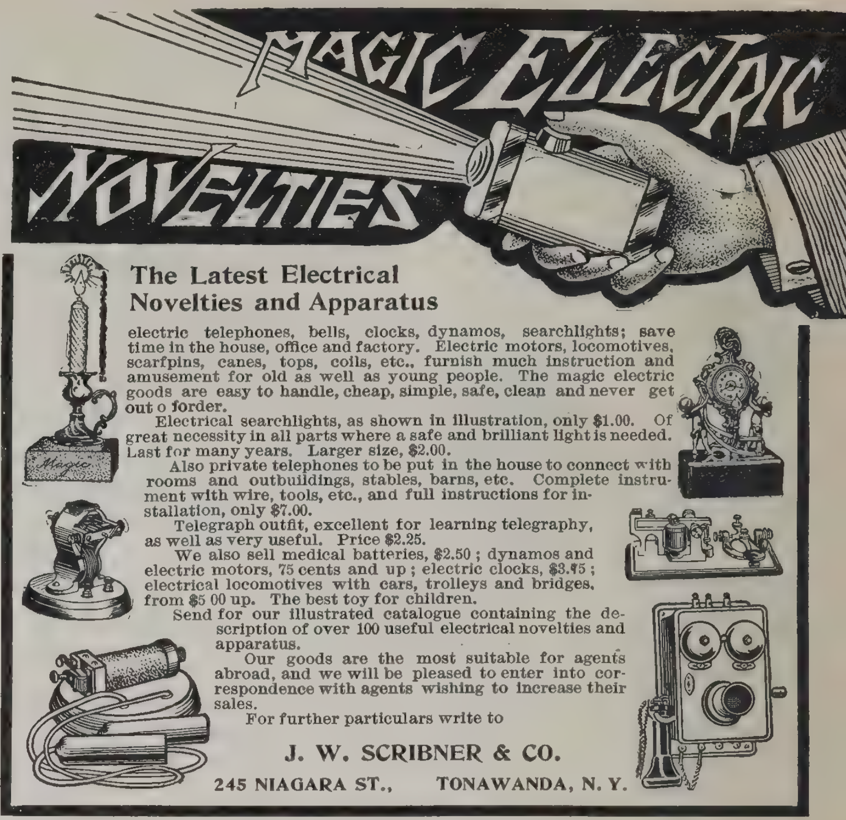

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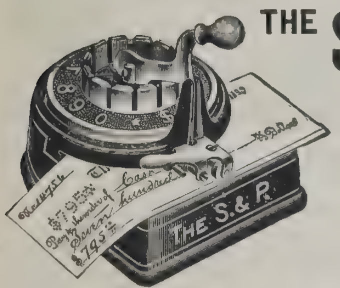

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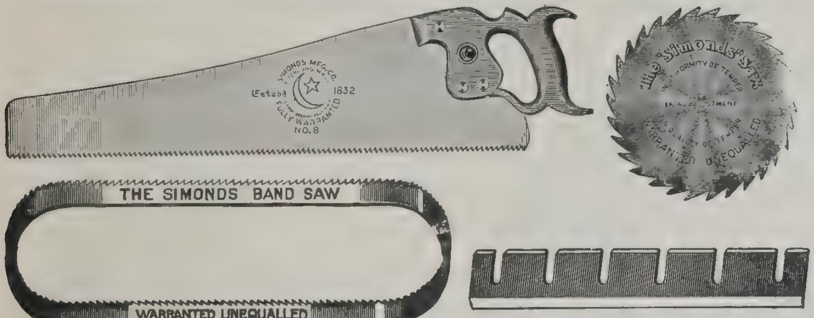

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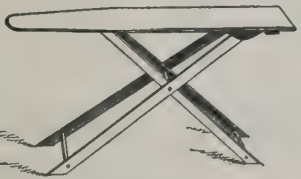

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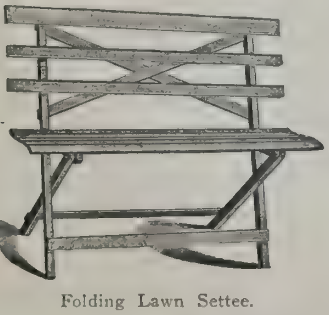

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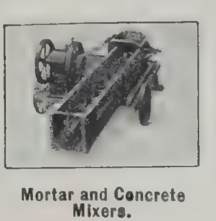

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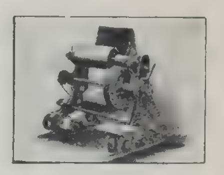

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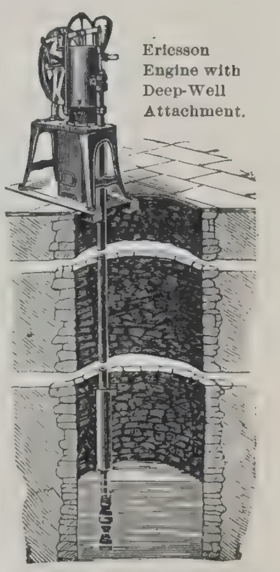

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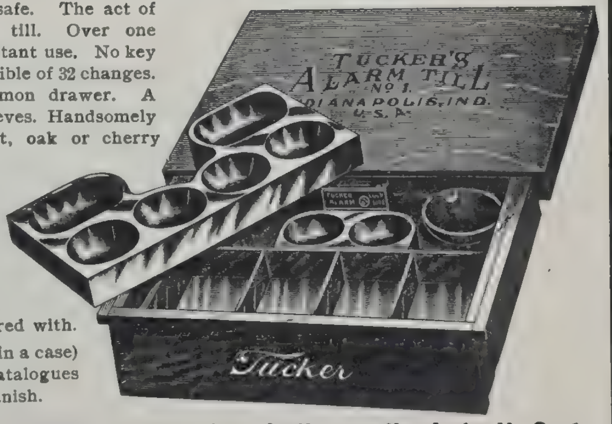

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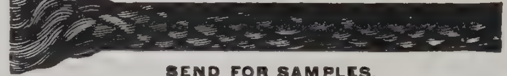

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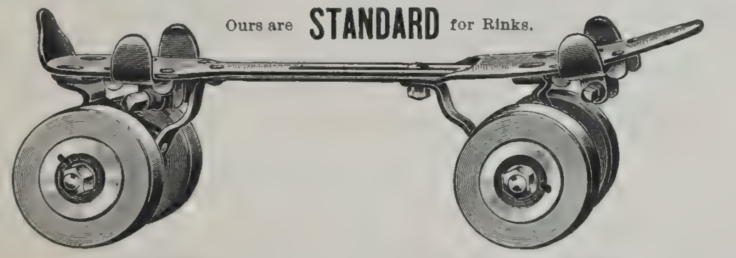
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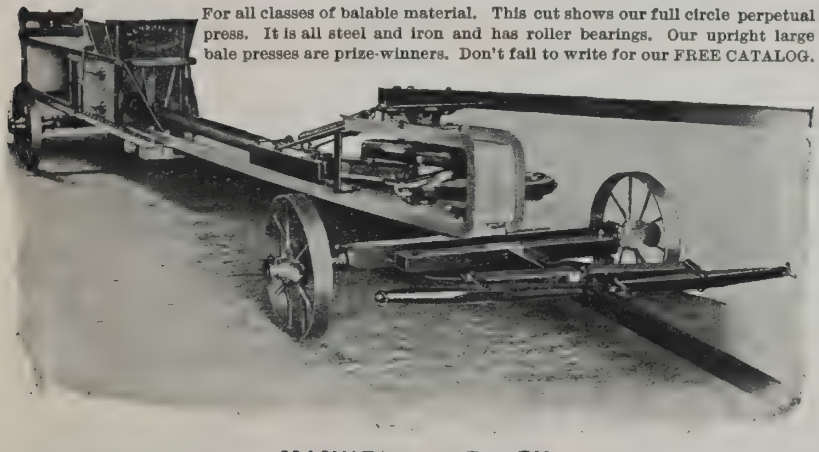

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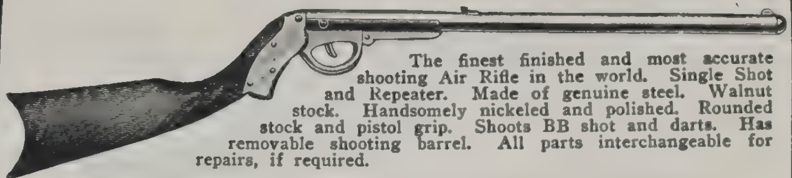

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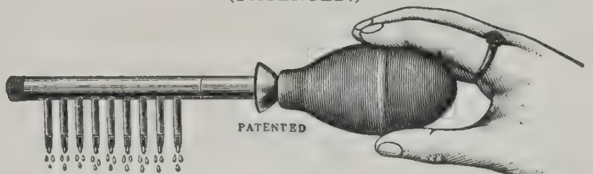

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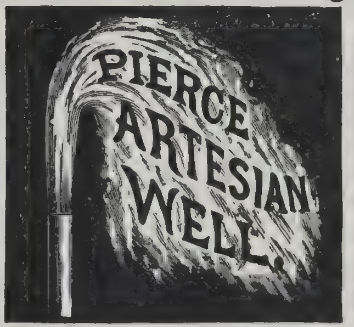
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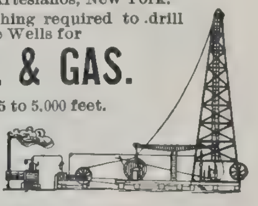

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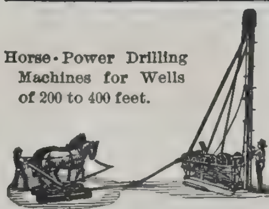

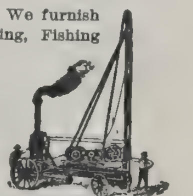

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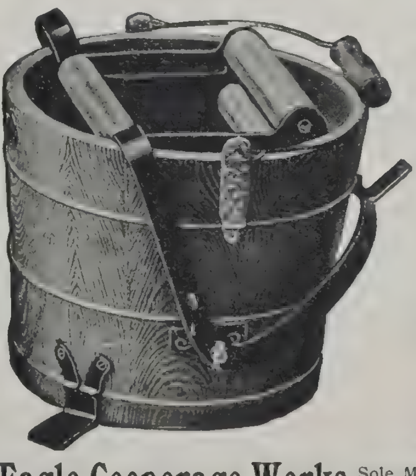

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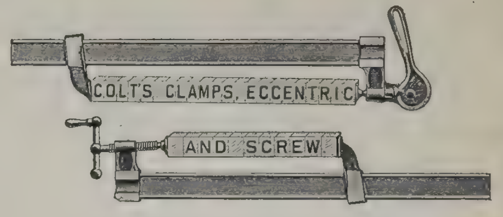
Time Saving.



Orders filled through commission houses

Catalogues free on application.

MANUFACTURED BY THE

Batavia Clamp Co., 35 Center St., Batavia, N.Y., U.S.A.

LIBERAL DISCOUNTS. AGENTS WANTED.

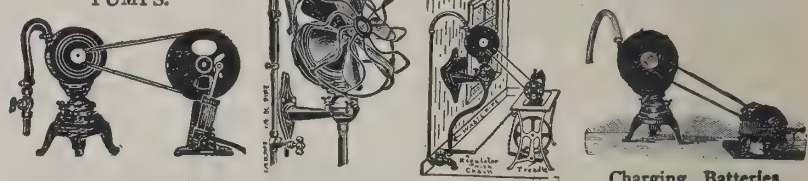
WATER MOTORS AND FANS, ETC.

Adjustable Every Way While Running.

Patented June 28, 1898. FANS. WATER MOTORS. Beware of Infringements.

PHYSICIANS' AIR PUMPS.

SMALL DYNAMOS AND MOTORS.



FOR COMPRESSING AIR.

Look for our name on motors.

Charging Batteries.
Operating Toys.
Miniature Lamps.

Sample 12-inch adjustable Bracket Fan expressed prepaid ANYWHERE upon receipt of $19 U. S. currency.

The A. ROSENBERG CO., MANUFACTURER, **Baltimore, Md., U. S. A.**

TROWBRIDGE CHOCOLATE CHIP CO.,

MANUFACTURERS AND EXPORTERS OF

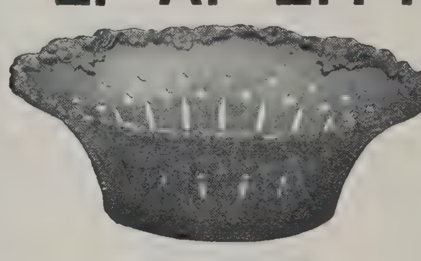
ORIGINAL CHOCOLATE CHIPS.

Most dainty eating confection in the world. Crisp and delicious.

Orders filled through commission houses. Correspondence solicited. Send for Circular A.

BOSTON, MASS., U. S. A.

L. A. LITTLEFIELD,



Bonbon. No. 452.

New Bedford, Mass., U.S.A.

Manufacturer and Exporter of

FINE

SILVER-PLATED WARE.

Orders filled through commission houses.
Correspondence solicited.
Catalogue "A" on application.

Pentucket Wood Heel Co.

MANUFACTURERS AND EXPORTERS OF

WOOD HEELS.

Also Fancy Covered Heels.

Orders filled through commission houses.
Correspondence solicited.

HAVERHILL, MASS., U. S. A.

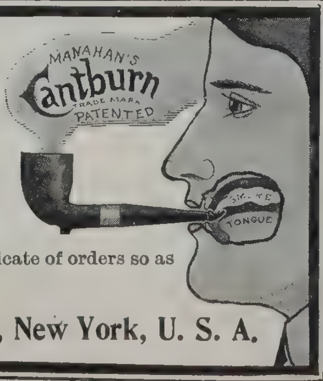
The "PIPE OF PEACE."

Can't burn the tongue. Always sweet, dry and clean.

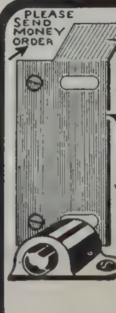
Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes. RELIABLE AGENCIES WANTED.



The Practical Mfg. Co., 1907 Park Avenue, New York, U. S. A.



MANAHAN'S FRESH AIR LOCK

TRADE MARK

GIVES PERFECT VENTILATION and SAFETY

Lets fresh air in and keeps burglars out. Automatically locks the window. Any one can attach it. You need it on every window. Your children can't fall out if you use it.

Reliable Agencies Wanted.

The Practical Mfg. Co., 1907 Park Avenue, New York, U. S. A.

AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

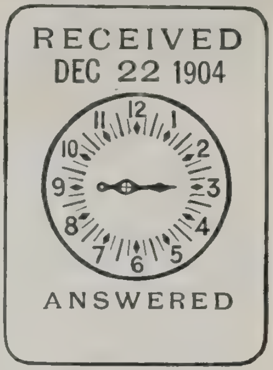
This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

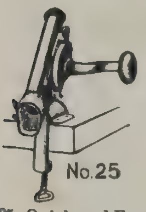
Price, with dates and printing die, as illustrated, or with any other wording that may be desired, **$3.50.**

A. A. WEEKS, 11 Gold St., New York, U. S. A.

Manufacturer of Glass and Iron Inkstands and Office Stationery.

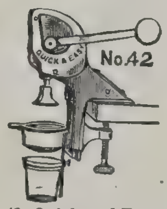
Send for Catalogue and Export Discounts.



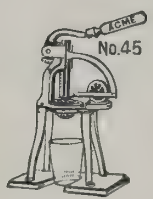


25. Quick and Easy. Cork Puller.

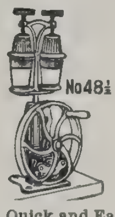
28. Samson Cork Puller.



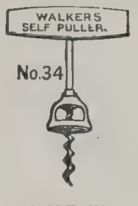
42. Quick and Easy Lemon Squeezer.



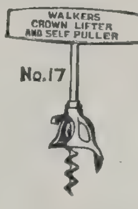
45. Acme Lemon Squeezer.



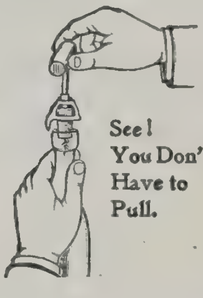
48½. Quick and Easy Shaker.

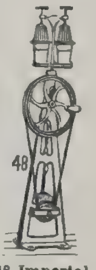


34. Self-Pulling Cork Screw.


WALKERS CROWN LIFTER AND SELF PULLER
No.17

17. Self-Pulling Cork Screw.


See! You Don't Have to Pull.



48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.

FOR THE

Finest Chocolates, Bonbons, Sugared Almonds, Gum Drops, Lozenges, Pan Work and Penny Goods,

Write to

NEW ENGLAND CONFECTIONERY COMPANY,

Circular B. **253 Summer Street, Boston, Mass., U. S. A.**

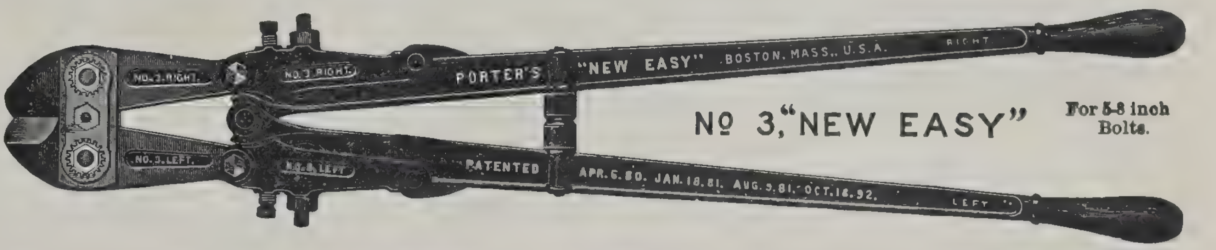
Trade Mark Registered. Necco Sweets New England Confectionery Co. Boston.

The "NEW EASY" BOLT CLIPPER IS THE BEST.

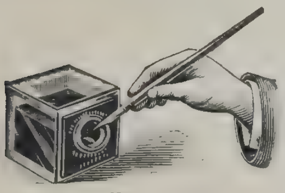
MANUFACTURED BY

H. K. PORTER,

6 Ashland St., EVERETT, MASS.



Nº 3, "NEW EASY" For 5-8 inch Bolts.



No. 7.

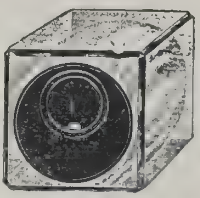
A FEW REASONS WHY

THE GARDNER

Is the Best Inkstand in the world.

The Gardner Inkstand is superior to any other make, for the following reasons: 1—It provides against evaporation, which soon earns its cost by the saving in ink. 2—Its peculiar construction prevents dust and dirt from getting in the ink, allowing it to retain its freshness as long as it lasts. 3—Absolute simplicity—there being nothing to get out of order.

Prices 65c. to $1.35 each.



No. 3.

THE ROYAL INKSTAND.

In point of simplicity, the ROYAL INKSTAND has no superior. Besides the glass reservoir, it is composed of only three parts—a rubberoid collar and an ink funnel and an arched diaphragm of soft rubber. These parts are all readily removable and easily separated from one another, without tools and without soiling the fingers.

No. 309. Royal, 25c. each.

Very Liberal Export Discounts.

C. H. NUMAN, Sole Mfr., New York City, U. S. A.

No. 309.

GOULD'S STEAM AND WATER PACKING.

ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM

SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE GOULD PACKING COMPANY, EAST CAMBRIDGE, MASS. ALBION CHIPMAN, TREAS.

J. C. F. PHINNEY, CUT SOLES, LYNN, MASS., U. S. A.

Orders filled through commission houses. Correspondence solicited.

EDWARD M. BLISS,

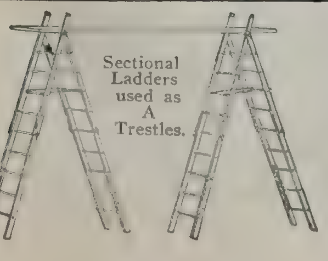
MANUFACTURER AND EXPORTER OF

LAMB'S WOOL SOLES

AND HAND-CROCHETED WORSTED SLIPPERS IN ALL COLORS AND SIZES.

Ladies in the United States buy the wool soles, crochet and sew the upper onto the sole, thereby making their own slippers for house wear Invaluable for invalids. Orders filled through commission houses. Correspondence solicited.

WORCESTER, MASS., U. S. A.

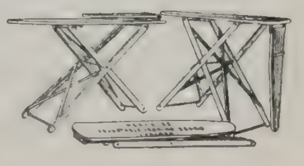

Sectional Ladders used as Trestles.

HERCULES SPECIALTY CO., ERIE, PA., U. S. A.

MANUFACTURERS AND EXPORTERS OF

Sectional, Extension and Step Ladders, Adjustable Scaffold Jacks, Ladder Brackets, Window Jacks, Swing Stages, Extension Planks, Lawn Swings, Adjustable Ironing Boards, Clothes Bars, etc.

WRITE FOR OUR ILLUSTRATED CATALOGUE.



HOPS FOR EXPORT

OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., ½ lb. or assorted.

DOLE BROS.' "EXTRA" HOPS—In cases and packets same as above.

DOLE BROS.' "SPECIAL" HOPS—Put up in Duck-wrapped bales containing 10 lbs. each.

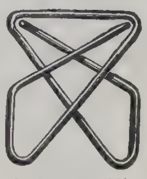
ALSO HOPS IN LARGE BALES FOR BREWERS.

Orders promptly executed through the leading commission houses.
Correspondence solicited.

DOLE BROS. HOPS AND MALT CO.,

101 Commercial St., BOSTON, MASS., U. S. A.

Gem Paper Clip.
15c. per 100.



Ideal Paper Clip.
15c. per 100.

Star Paper Clip.
10c. per 100.

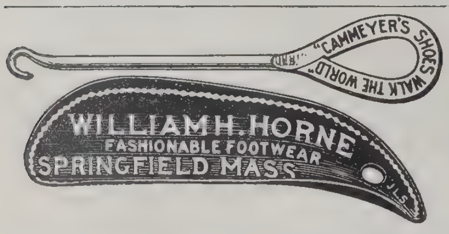
"Pinch Paper Fastener.
25c. per 250.

We Are Headquarters for

Paper Clips and Paper Fasteners.

Also Stationery Specialties and Novelties. Write for catalogue and our export prices and discounts.

CUSHMAN & DENISON MFG. CO., 240-242 West 23d St., New York, U. S. A.

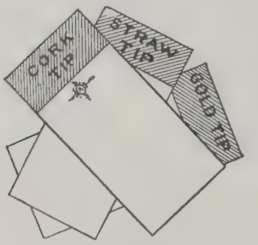


Steel Advertising Novelties

Button Hooks, Shoe Lifts, Letter Openers, Key Rings, Etc.

Only factory of its kind in the United States. Orders filled through commission houses. Correspondence solicited. Send for Catalogue "A."

J. L. Sommer, NEWARK, N. J., U. S. A.



L. KEHLMANN,

—IMPORTER OF—

CIGARETTE PAPER, CORK AND STRAW TIPS, ETC.
ALL KINDS OF LABELS, Printed and Embossed.
Machine-Made Cigarette Tubes.
Special Cigarette Paper in Books for Tobacco.
Cigarette Paper Printing of Every Description.
176-178 Centre Street, New York, U.S.A.
Established 1890.

M. HIMOFF,

MANUFACTURER OF

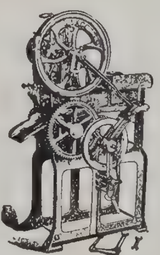
TOBACCO-CUTTING MACHINES

Small and Large Sizes.

ALSO CIGARETTE RIPPING MACHINES AND CIRCULAR KNIFE GRINDERS.

Send for descriptive catalogue.

207 CENTRE STREET, NEW YORK, U. S. A.



BROWN'S BRONCHIAL TROCHES

"Brown's Bronchial Troches"

FOR COUGHS AND COLDS

A WORLD-RENOWNED REMEDY

For **Coughs, Colds, Bronchitis, Asthma, Catarrh,** the Hacking Cough in **Consumption,** and numerous affections of the **Throat,** giving Immediate Relief. They have received the sanction of physicians generally and testimonials from eminent men throughout the world. All dealers in medicines and proprietary goods can recommend them with confidence. Caution.—**"Brown's Bronchial Troches"** are sold only in boxes or bottles, with Facsimile of the proprietors on outside wrapper of the package.

JOHN I. BROWN & SON, Proprietors, **Boston, Mass., U. S. A., and London, England.**

Drill for Water,

Prospect for Minerals.
Drill Test and Blast Holes.

Coal,
Gas,
Oil.

We can meet every requirement from light horse and gasoline power to heavy steam power machines. For rapid work, great durability and simplicity of construction, our machinery

Leads the World.

LOOMIS MACHINE CO.

Loomis Machine Co.
Tiffin, Ohio, U. S. A.

TANITE

GRINDING MACHINES.
EMERY WHEELS.
EMERY.

The Tanite Co., Stroudsburg, Penna., U.S.A.

You can buy to advantage through any American Export House—preferably in New York City.

The National Emery Wheel Company

WORCESTER, MASS., U. S. A.

MANUFACTURERS OF

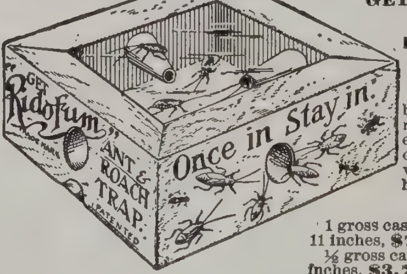
Emery and Corundum Wheels,

AND ALL KINDS OF

Emery Wheel Machinery, Emery, Corundum, Etc.
Thin Elastic Wheels a Specialty.

Orders received through commission houses. Correspondence solicited.

ROACHES and WATER BUGS



YOU CAN GET **"RID-OF-UM."**

TRADE MARK.

It Is Easy if You Use the "RID-OF-UM" Trap.
A Sanitary Method of Destroying.
No Poisons.

A careful study of the habits of all troublesome bugs usually found in stores, warehouses, hotels, restaurants, and sometimes in private dwellings, enables us to state with authority that when one of any kind of bug gets into the trap, all the rest will follow. Easily killed by dropping into fire or hot water. **Thousands in use.**

FOR INTRODUCTORY PURPOSES.

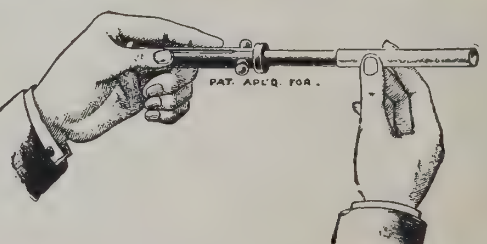
1 gross case, gross weight, 38 lbs. (17 kilos); size, 24½x16½x11 inches, **$7.00** (£1 9sh. 2d.) net f. o. b. New York.

½ gross case, gross weight, 20 lbs. (9 kilos); size 24½x16½x5½ inches, **$3.75** (15 sh. 8d.) net f. o. b. New York.

The Bennett Paper Box Co., Sole Manufacturers, **Springfield, Mass., U. S. A.**

Imperial Pocket Cigarette Machine

Greatest Invention of the Age for Cigarette Smokers.


PAT. APL'Q. FOR.

It enables smokers to make their own cigarettes by using ready-made tubes which we supply with our machines. Plain or fancy tips can be had. Different grades of tobacco may be mixed to suit the smoker, and, while saving 300 per cent., he smokes at the same time the tobacco that suits his taste best.

On receipt of $25 in United States gold, or its equivalent, we will box, ready for steamer, and deliver f. o. b. cars New York, one gross Imperial Cigarette Machines, each in a box with 100 tubes. One dozen samples, postpaid, $3; one single sample, postpaid, 50 cents. Agents wanted.

Columbia Machine Works and Mfg. Co., 330 SEVENTH AVENUE, NEW YORK, U. S. A.

EVERY HEEL IS A SALESMAN.

THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

Every Pair Sells from Two to Fifteen Pair.

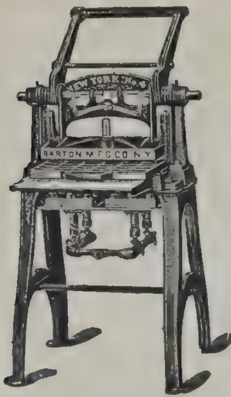
It is a RECORD and a FACT that one pair of FOSTER HEELS proved so satisfactory to the wearer that 15 pair have been sold on this one party's recommendation.

"ELASTIC TIP CO., Boston:
"Dear Sirs—I have worn your Foster Rubber Heels on slippery pavements, on ice and snow and they *positively* do not slip. They are *simply perfect*. Yours truly,
"N. E. VAN VOORHIS, Newton."

"MERIT ALWAYS WINS"

And **that's why** people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.

FOSTER RUBBER CO., 370 Atlantic Ave., BOSTON, MASS.



RUBBER STAMPS

Can be made with good profit, and without previous experience on our

Patented Automatic Vulcanizer and Mould Press.

Full instructions with each outfit.

COMPLETE MANUFACTURING OUTFITS, $25 TO $100.

Send for Export Catalogue No. 1.

BARTON MFG. CO., 335 BROADWAY, NEW YORK, U. S. A.

Union Computing Machine Company,

3 Union Square West, N. Y., U. S. A.
Cable Address: "Computico, N. Y."

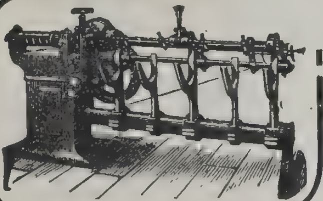
Manufacturers of

Union Cash Registers

Discounts on Application. Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING ❧ CHECK AND STRIP PRINTING ❧

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil); 6.1 cu ft. (172 cu. met.). Order direct or through any reliable exporter.



Our Wire Straightening and Cutting Machinery and Riveters

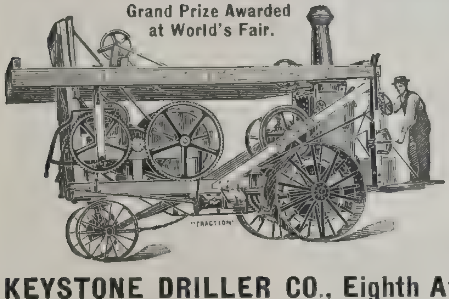
are the original and standard machines improved, and are guaranteed in every respect. Design and workmanship the best; quantity and quality of production unequaled.

SPECIAL AUTOMATIC MACHINERY. We have large and varied experience in designing and building special automatic machinery. All our construction is substantial, combining speed and simplicity, securing the minimum expense for operation and repairs.

We have innumerable drawings and patterns, some of which might be adapted to your needs.

THE F. B. SHUSTER CO., Formerly John Adt & Son, **New Haven, Conn., U.S.A.**

The Keystone GOLD-FINDER and Blast-Hole Driller



Grand Prize Awarded at World's Fair.

Makes an 8-inch hole through any formation, to any depth, and brings everything to the surface. Used for assaying Alluvial Deposits, Lake and River Beds, etc., ahead of dredges.

Adapted for drilling large Blast Holes in Tight Placers.

Many sizes—Traction and Non-traction.

Our Vacuum Sand Pump is the only device assuring a perfectly accurate test for gold.

We also make Water and Oil Well Machines—all sizes, 100 to 3,000 ft. capacity.

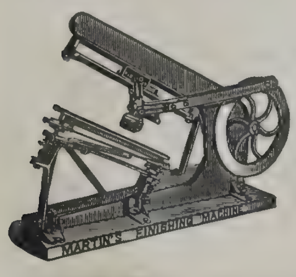
KEYSTONE DRILLER CO., Eighth Ave., Beaver Falls, Pa., U. S. A.

Cable Address: "DRILLER." Codes Used: Western Union, Lieber's and A B C, Fifth Edition.

WILLIAM F. MARTIN,

MANUFACTURER AND EXPORTER OF

Martin's Jack for Finishers of Leather.



It leads all rivals. Compact, simple, easy and silent action. Quickly adjustable. Quantity and quality of work unequaled. High rate of speed.

Will set out, pebble, "stone out" and glass in black and paste. Using either oil or soap blacking entirely without hand labor.

For morocco or lining finishers, the Martin Jack will glaze, roll, pebble and glass out superior to other machines. Agates, Glasses, etc., in stock.

Orders filled through commission houses. Write for Circular "M." Address

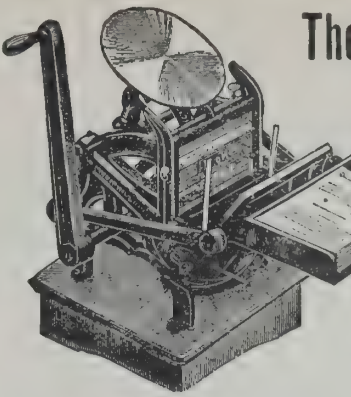
WILLIAM F. MARTIN, Salem, Mass., U. S. A.

Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for $10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.

THE R. L. GRIFFITH & SON CO., Providence, R.I., U. S. A. Established 1879.



The Baltimorean Printing Press

No. 14

Will print a form of type 6 x 9 inches, so that any merchant, banker, druggist or other business man can print his own letter heads, circulars, notices, business cards or envelopes, and will pay for itself in one year. Price, with type, complete, **$35.00.**

The J. F. W. Dorman Co., Baltimore, Md., U. S. A.

J. G. BLOUNT CO.,

EVERETT, MASS., U. S. A.

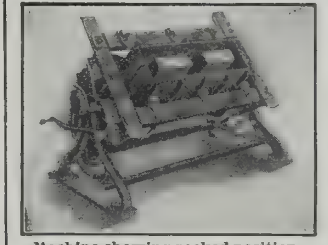
Manufacturers and Exporters of the

BLOUNT GRINDERS.

IMPROVED PATTERNS, NEW DESIGNS, MATERIAL AND WORKMANSHIP FIRST-CLASS

Arbors ground and run in self-oiling bearings. 6-inch to 24-inch wheels.

Orders filled through commission houses. Correspondence solicited. Illustrated Catalogue "B" on application.



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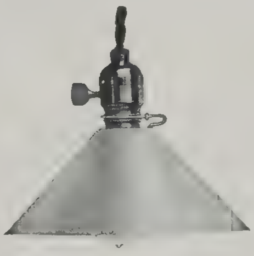

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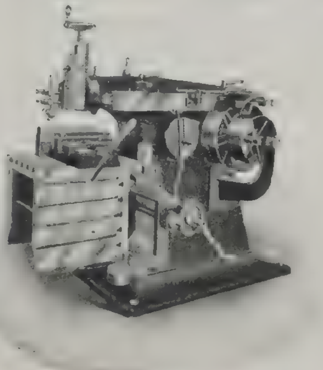

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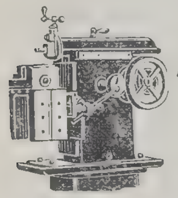

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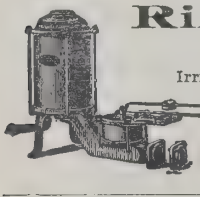

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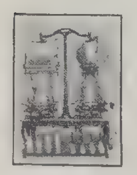

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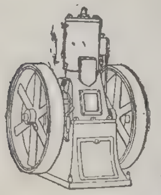

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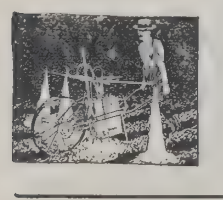

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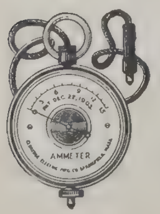

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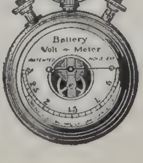

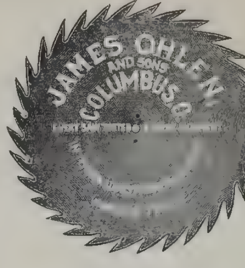
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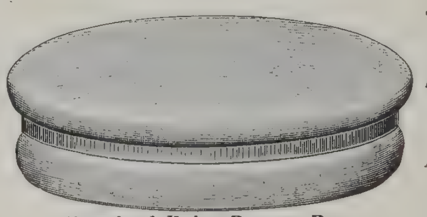

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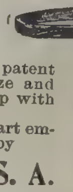

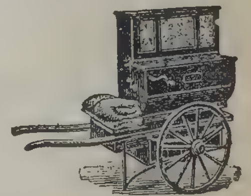

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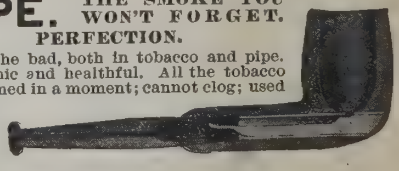

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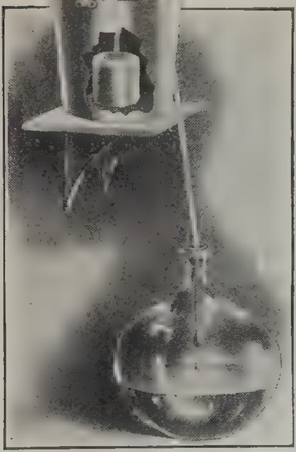

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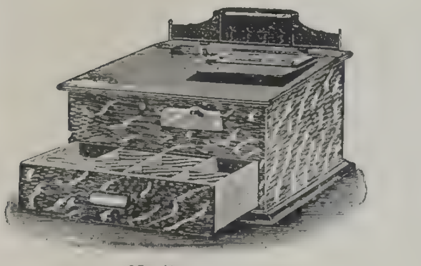

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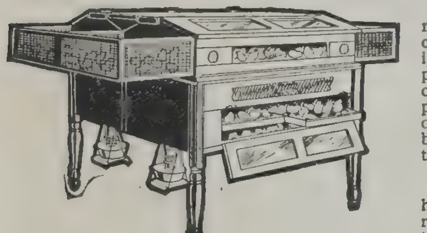

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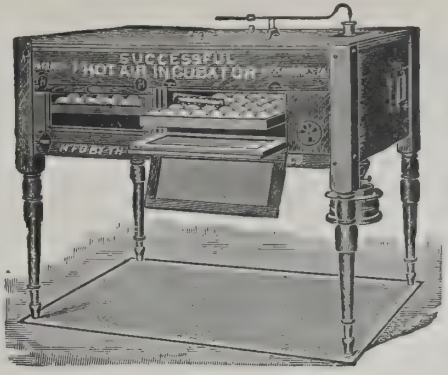

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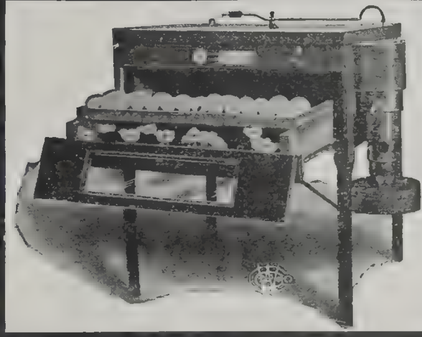

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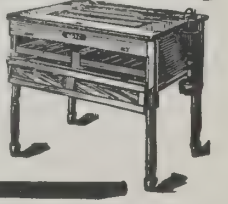

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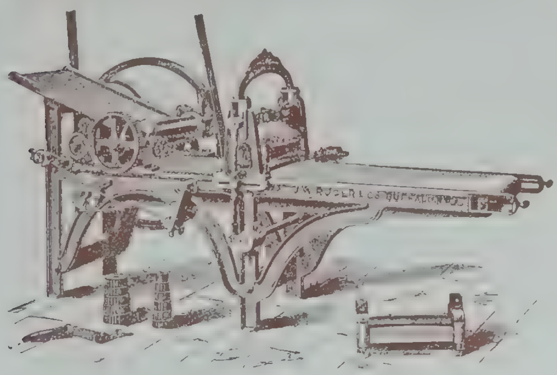

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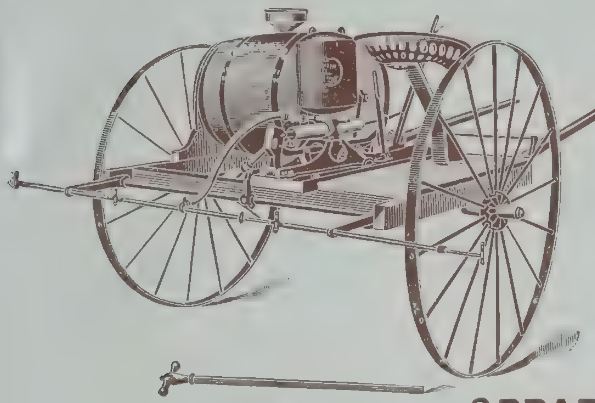

FIG. 62.

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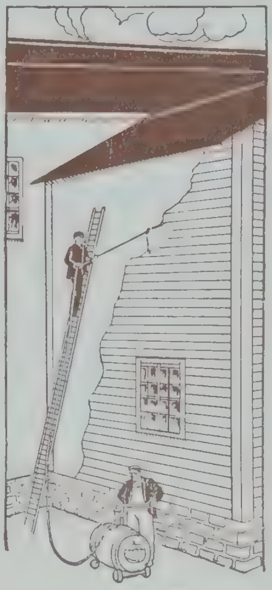

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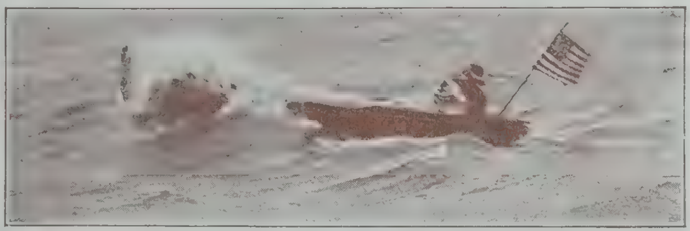

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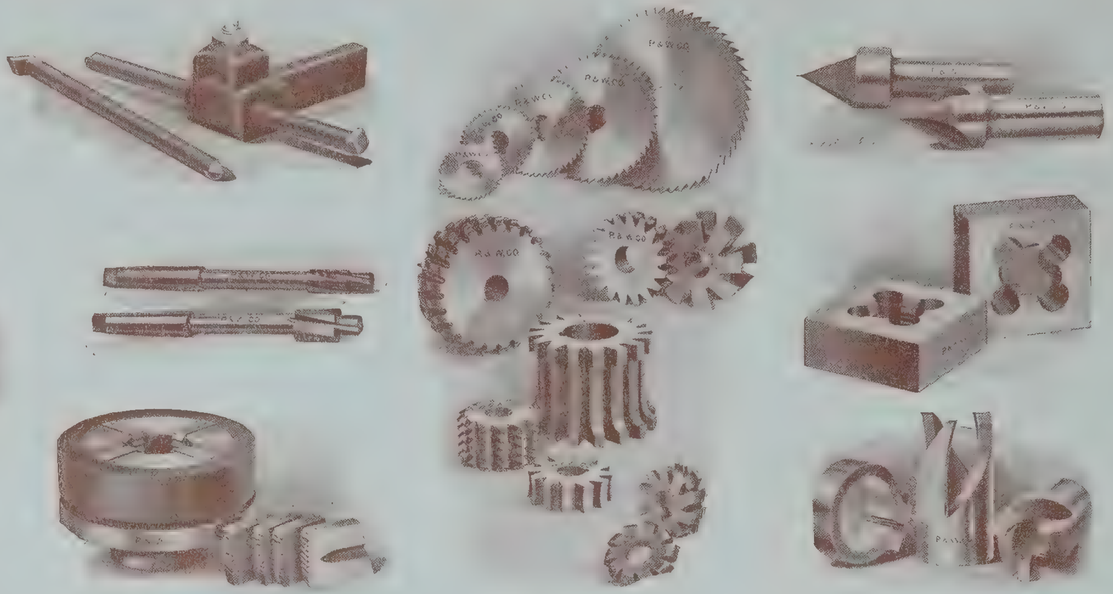

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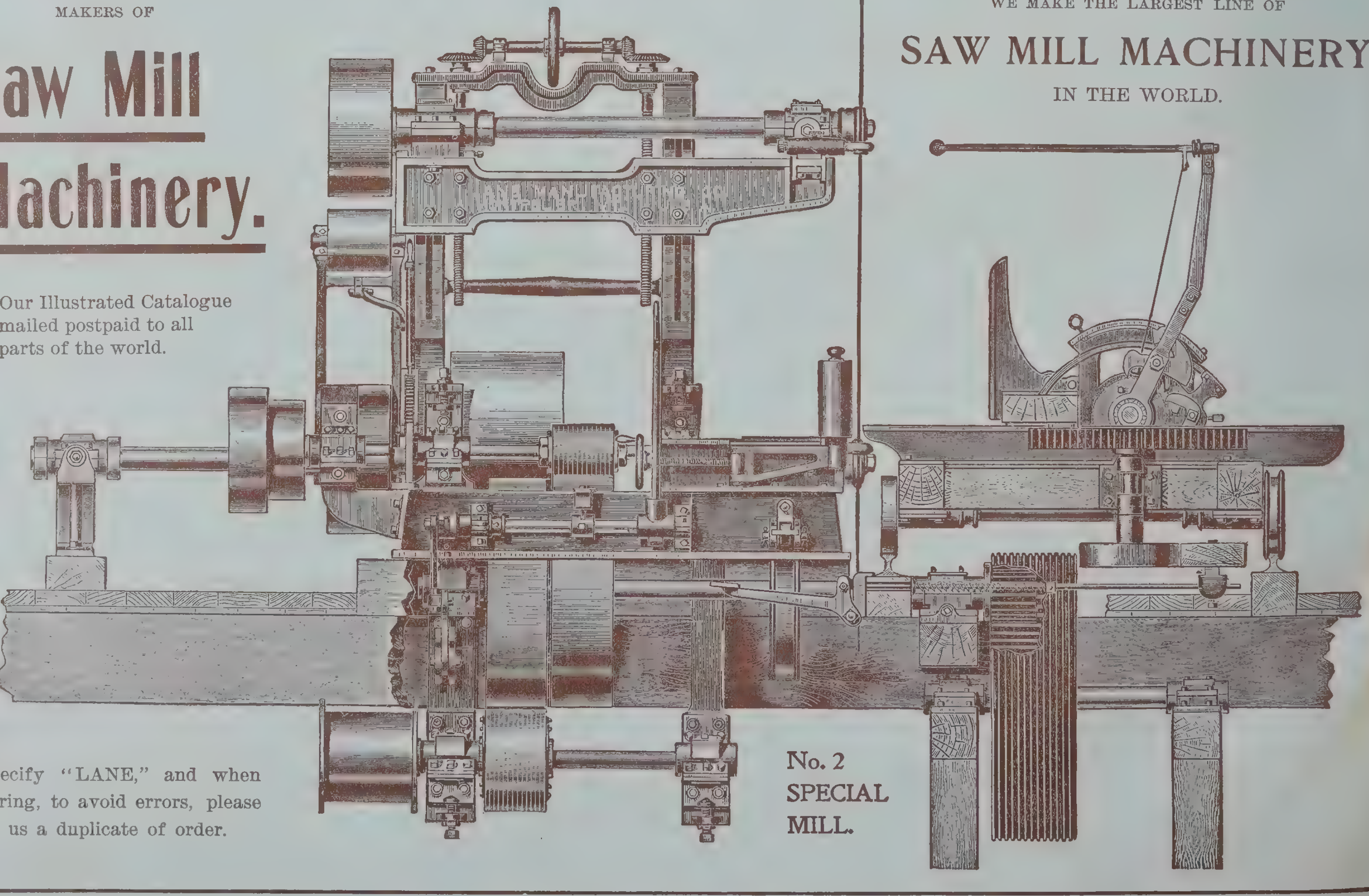
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